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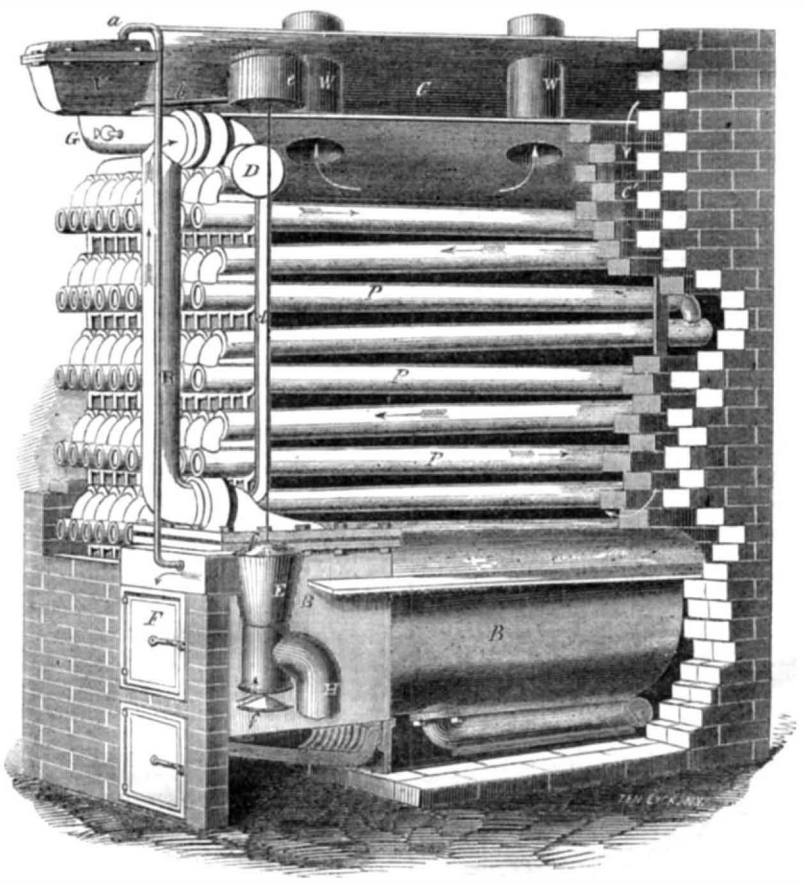
Fulminating Quicksilver.

On the late trial of Dr. Simon Bernard, in London, for conspiracy to murder Louis Napoleon, some very interesting scientific information was elicited in the testimony regarding fulminating powder. J. D. Parker, a druggist, testified that Bernard on the 14th of November, 1857, bought of him 8 pounds of absolute alcohol, 10 pounds of pure nitric acid, and 1 pound of quicksilver, which were the exact proportions for making fulminating quicksilver. C. Nicholson, chemist, engaged in the manufacture of fulminating powder for the government, testified that the ingredients and proportions for making fulminating mercury were 1 part by weight of mercury, 8 of absolute alcohol, and 10 of pure nitric acid. In order to make this powder, the mercury is first dissolved in nitric acid, and the solution thus obtained is added to the alcohol. When this is effected, a violent reaction ensues, accompanied with evolved masses of white vapor, and the fulminating mercury is precipitated in the form of a dense powder varying from a white to a gray and a yellow brown color, but the white is the purest and strongest. It is more explosive than gunpowder when dry, but it is kept prepared in a wet state, when it is perfectly harmless. M. C. Picot, director of the chemical laboratory connected with the artillery department in Paris, testified that the powder of the shells or grenades employed in the assassination act in Paris was pure fulminating mercury. He had examined their contents and was sure of this. W. Tozer, of the artillery works of the Woolwich arsenal in England, testified that fulminating mercury was twenty times stronger as an explosive agent than gunpowder. This he had proved by experiments with shells.

Burning of Western Steamers.

It appears to us that the new steamboat law has become a dead letter on our Western waters. Never before in all the dark history of Mississippi steam navigation, have more steamers been burned in the same space of time than from the beginning of the present year up to this date. Some of these disasters, with the awful consequences attending them, we have noticed in former numbers, and now we have to add another to the dread catalogue. On the 22d of last month, the *Ocean Spray* was consumed by fire about five miles above St. Louis while racing with the *Hannibal City*, and although it was broad daylight, the flames spread so rapidly that a great number of the passengers lost their lives. The testitimony of those who were saved goes to prove that turpentine was sprinkled among the coals in the bunkers, and this took fire from the furnace, when the entire destruction of the vessel followed. What report will the inspectors for that district make of this horrible affair?

BROWN'S HOT WATER APPARATUS.



The best means of warming buildings, and of producing an artificially warm atmosphere in conservatories and forcing houses, has often been the subject of discussion in the columns of the SCIENTIFIC AMERICAN; and the general testimony has been in favor of heating by means of hot water, the numerous advantages of which it is needless to recapitulate. It may not be out of place, however, to mention that with them the air is never in contact with red hot metal, it cannot by any possibility reach a temperature as high as in the hot air furnace, and it becomes charged with no deleterious gas, but always remains the same in chemical and mechanical characteristics as when it entered the arrangement to be heated.

Our illustration is a perspective view of the excellent arrangement for heating air by hot water, invented by J. Brown, of this city, and patented by him May 30, 1854, and re-issued to him August 14, 1855. A portion of the brickwork is removed to show the arrangement of the tubes, and the course of the air and water.

A solid brickwork foundation being prepared, the boiler, B, is set therein, the fire door, F, being let into the front of it, and the fire box is made of the boiler itself, so that there is always a mass of water surrounding the fire; by this means all the heat produced by the combustion of the fuel is made available, and is absorbed by the water. The whole of the apparatus being filled with water, when it gets warm it gradually begins to ascend from the boiler, B, up the rise pipe, R, and from that to the distributing pipe, D, from this the cold water descending the pipes, P, allows the warm water to descend in them also, and come by the return pipe (seen at the bottom of the boiler) into the boiler again; thus a continuous circulation of warm water gradually becoming hotter, is secured—the arrows in the pipes indicate the direction of the currents. But if the fire is kept up, the water would commence boiling, and steam be generated, which would totally stop the action of the apparatus. This is prevented by an ingenious device. When the apparatus is full of water, it rises through the pipe, G, up to about an inch in the box, V, which is divided into two compartments up to about four-fifths of its hight, and a siphon connects the two compartments. When ebullition commences, this water is, of course, thrown over the top of the compartment, and passes through the pipe, *b*, into the box, *e*. In this box, *e*, there is a float, which, as it rises, closes the lower valve, *f*, of the draught box, E, that admits the air under the fire, and thus supports the combustion, and elevates the upper valve or damper, *f*, which admits the cold external air on to the top of the fire, and thus checks the fire, and the current of air cools the water in the boiler down to a proper temperature. The external air finds its way to the draught box, E, by means of the pipe, H, which is represented as broken off.

a is a pipe by which any steam that may by chance be generated can pass down into the fire, and thence to the chimney. The cold air coming down through flue, C′, and space, C, is warmed by contact with the pipes, P, and passes up through the pipes, W, to the registers, or other means of rendering it available for warming the building. The white arrows indicate the direction of the current of air passing in cold and out warm.

It will be seen from this description that the air can never become too hot, and the apparatus is self-regulating in all its parts, and compensates for any expansion of the water at the boiling point. A continuous ventilating, as well as warming current of air is secured through the building, and the air is as pure as the moment it entered the flue.

Any more information concerning this apparatus can be obtained by addressing Brown's Water Furnace Co., 274 Canal street, three doors east of Broadway, New York.

The Uncertainties of History.

During the confinement of Marie Antoinette, the Queen of France, by the Jacobins of Paris, she was deprived of the use of the cosmetics with which she was wont to give the raven hue to her naturally silvery locks; and history, in describing her execution, represents her hair as changing from a jet black to gray color through the mental anguish she experienced. The assassin Orsini, lately executed in Paris for attempting the life of the French Emperor, and ruthlessly murdering twelve innocent persons, presented the same apparently strange anomaly from the same cause. When Orsini was arrested, his luxuriant locks were as black as night, but when guillotined, they were of an iron gray color, simply because he either neglected his toilet, or else was deprived of tne usual hair dye he previously employed to give them their black color. His friends, and the papers generally, attribute the change to another cause, of course, and we have no doubt that history will represent the effect as being produced by the mental activity and agony he experienced during his incarceration.

The Government and Agriculture.

The House of Representatives at Washington have passed a bill donating land to the several States for the benefit of agriculture and the mechanic arts. The bill was introduced by Mr. Morrill, and passed by yeas 104, nays 101. It grants six millions three hundred and forty thousand acres of land, to be apportioned to each State in a proportionate degree with its number of Senators and Representatives—which is equal to twenty thousand acres for each Senator and Representative in Congress—to which the States are now respectively entitled. The proceeds of the sales of these lands are required to be invested in stocks of the United States, or of the States, or some other safe stocks, and the money so invested to constitute a perpetual fund, the interest of which shall be inviolably appropriated by each State to the endowment, support and maintainence of at least one college, where the leading object shall be, without excluding other scientific or classical studies, to teach such branches of learning as relate to agriculture and the mechanic arts, in such manner as the Legislatures of the States may prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.

Traction Engines.

From our English exchanges we learn that Messrs. Tuxford & Sons, of England, are exporting quite a number of their traction engines to Cuba. They are intended to draw the sugar from the mill to the railway, to plow, and to be made generally useful. Senor Placide Gener is the enterprising importer, and we hope that he may be well repaid for his appreciative spirit.

A Deadly Color.

It is said that the new Azof green of the Paris spring fashions is dyed of such poisonous materials that seamstresses who prick their fingers while sewing it lose the use of their hands, and ladies have been taken violently ill from wearing shawls of this color, and in consequence, inhaling its poisonous odors. The tint is very brilliant.

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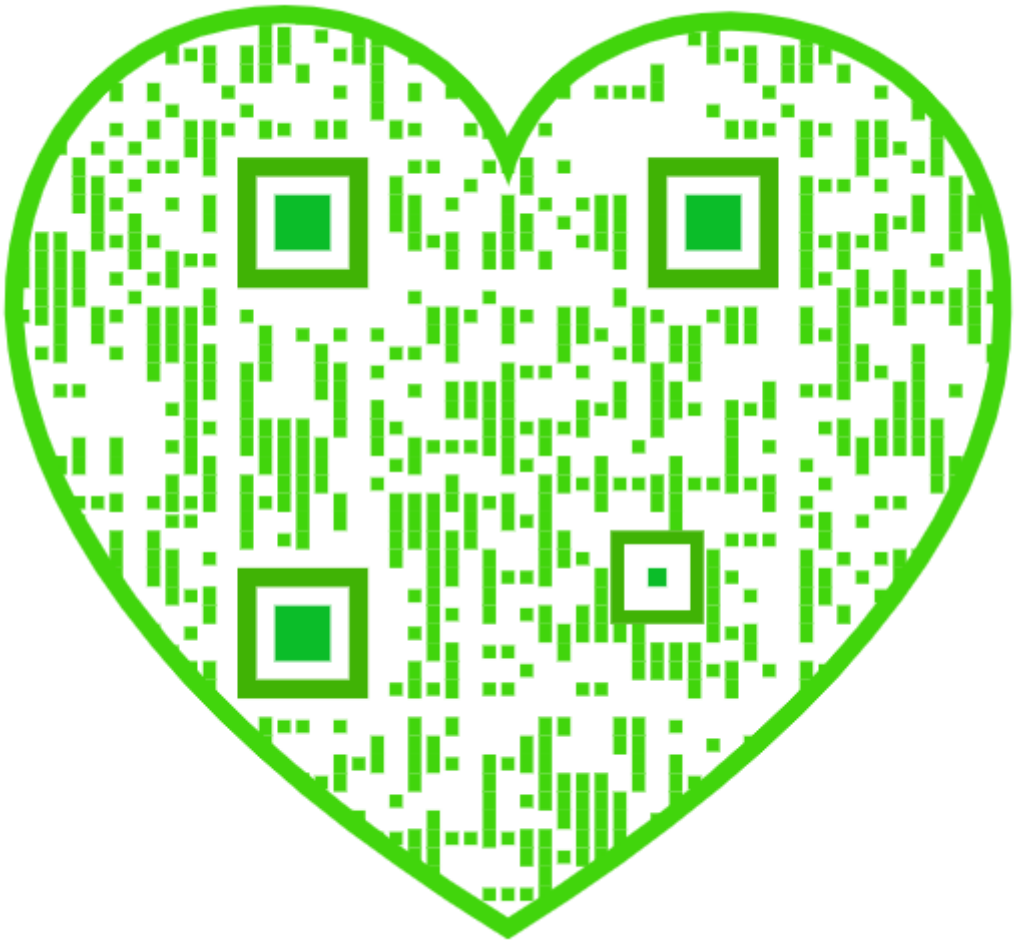

Issued from the United States Patent Office

FOR THE WEEK ENDING MAY 4, 1858.

[*Reported officially for the Scientific American.*]

LAMPS—L. Bailey, of Charlestown, Mass., and R. Thayer, of Boston, Mass.: We claim, first, The arrangement of the annular reservoir, G, within the case, C, as shown, so that both the inside and the outside draughts of the flame may be supplied up through the base and pedestal, and in their passage cool all sides of the reservoir, substantially as set forth.

Second, The button, L, when made of concavo-convex form, and of the proper dimensions, so as to throw the air that passes up through the central passage, H, down on the flame, and at the same time permit the flame to rise vertically, instead of spreading it laterally, as usual.

Third, The combination of the revolving cap, E, wick tube, I, with or without the button, L, and the annular reservoir, G, arranged relatively with each other, and used in connection with the case, C, the hollow pedestal, B, and base, A, substantially as described, and for the purpose set forth.

[This invention consists in a peculiar construction of the lamp, whereby the reservoir containing the burning material is kept in a cool state, the flame supplied with a large amount of oxygen commensurate with its requirements, to produce perfect combustion, the light is readily graduated as desired, and wholly extinguished when necessary, without the emission of smoke, or any disagreeable odor, and the wick is retained in proper position, so that it may be trimmed accurately with great facility.]

DEVICE FOR SHELTERING FROM DUST THE LOWER CARRYING PULLEY OF BAND SAWS—James Balla, of Richmond, Ind.: I do not claim hanging saws by attaching the same to straps which pass over reciprocating pulleys, for this has been previously done.

But I claim the shields or guards, J J, placed over the lower pulley, D, when constructed and arranged relatively with the straps, H, of said pulley, substantially as and for the purpose set forth.

[This invention relates to an improvement in that class of sawing machines in which the saws are attached to straps or bands which pass over pulleys having a reciprocating rotating motion. The object of the invention is to obviate the difficulty attending the accumulation of sawdust between the lower pulley and saw band. This is done by having shields or guards placed over the lower pulley, properly arranged to protect it.]

STEAM ENGINES—Daniel Barnum, of Jersey City, N. J.: I claim combining with an air pump of a marine engine an independent or separate suction pipe connecting the hold of the vessel with the air pump directly, and not through the channel way or condenser, such pipe being connected, and the combination being substantially such as is set forth.

MACHINE FOR BENDING WOOD—Thomas Blanchard, of Boston, Mass.: I do not claim, broadly, what is termed "compound bending," or preventing the fibers of the wood from being distended longitudinally while being bent in the required form, for this process was formerly patented by me.

But I claim the particular means employed for thus bending the wood in the required form, for the special purpose mentioned, that is to say, the employment or use of the rotating mold, E, with the strap, G, attached, in combination with the sliding pressure bar, K, provided with the adjustable slide or stop, h, the outer end of the strap, G, being attached to the bar, K, or box. L, and the parts arranged as shown, whereby the strips, N, may be bent in regular or irregular curved form, with the ends adjoining each other, for the manufacture of picture and slate frames, chair bottom hoops, and similar articles.

[A notice of this invention will be found on another page.]

MACHINES FOR HULLING RICE—Francis and Lodowick Burdick, of South East, N. Y.: We claim the peculiar dress in our horizontal stone mill, composed of the frustum of a cone and its corresponding concave, constructed and operating as and for the purpose described.

RAILROAD CAR COUPLINGS—W. H. Burridge and N. L. Post, of Cleveland, Ohio: We claim making the fulcra of the jaws forward of, or more towards the center of the coupling bar or link than those parts of the jaws which catch the head of the link, so that the draft upon the link has a tendency to close the jaws, substantially as described.

And in combination with vibrating jaws having their fulcra arranged as described, we claim the peculiar construction of the link bar, substantially as described, by which the said link connects the couplings, when the cars are run together, and by which they uncouple or disconnect themselves, when one of the cars is thrown from the track, or the link vibrated beyond a given angle, as described.

MACHINE FOR MAKING HORSE SHOE NAILS—Tisdale Carpenter, of Providence, R. I.: I claim the described machine for making horse shoe nails, consisting essentially of the revolving die table, I, arm, P, carrying the swage, l, and shear, m, the carriage, S, with its swage, b, constructed and operating in the manner substantially as set forth.

Second, I claim the receiving box. R, with its retaining spring, o, substantially as described.

Third, I claim, in combination with the table, I, the guide, h, arranged and operating as set forth.

WATER CLOSET—William S. Carr, of New York City: I claim the concave ring or cup, m, screwed onto the hollow column, l, in the manner and for the purposes specified, when this is used for passing the rod to the lever of pan water closets, substantially as specified.

SEED PLANTERS—James Charlton, of Alleghany, Pa.: I claim, first, The rings, y, with their lugs, b, projecting studs, t, and heads, c, in connection with the strips, x, and cylinder, g, for the purpose of enlarging or contracting the seed chambers, and agitating the seed in the hopper.

Second, The arrangement of the flexible rods, S, axle, k, yoke, j, lever, p, and strip, r, with notches, 1 and 2, as described, and for the purpose set forth.

REVOLVING FIREARM—Samuel Colt, of Hartford' Conn.: I claim as new, in combination with a central pin which is inserted from behind, to admit of readily taking out and replacing the rotating breech, and which is feathered or otherwise fitted to the central bore of the rotating breech, so as to turn therewith, and which passes entirely through the central bore of the said rotating breech, and into the framing in front for support, the making of the rear end or head of the said central pins with ratchet teeth, or the equivalent thereof, to be acted upon by the mechanism for turning and holding the rotating breech all substantially as and for the purpose described.

NUT MACHINE—Richard H. Cole, of St. Louis, Mo.: I claim the use of a traversing die, whereby the nut blank is first passed and prepared on the blank surface of the said die, and afterwards punched and finished over a hole in the same die, substantially in the manner dercribed.

BRICK KILNS—John W. Crary, of New Orleans, La.: I claim, first, The peculiar arrangement and manner described of constructing the furnaces, so that by means of the arches, B B placed as specified, and constructed of brick, or other argillaceous substance, intermediate supports of grates or otherwise for the fuel are rendered unnecessary.

Second, The peculiar arrangement of auxiliary ash pits or air chambers, C', with main air chambers or ash pits, C, and arches, D' D', formed by setting the brick zig-zag, and alternately diagonal, as specified, for the purpose set forth.

Third, The specified manner of constructing the brick arches, D' D', when the bricks are "set" as specified, so that the horizontal area of their interior chamber shall be greater than that of the throat of the furnaces, for the purposes set forth.

Fourth, The specified zig-zag and alternately diagonal setting of the brick throughout the kiln, for the purpose set forth.

Fifth, The specified arrangement and construction of auxiliary end arches and furnaces, in combination with the main side arches, for the purposes set forth.

Sixth, The specified arrangement of vertical flues and horizontal passages in the wall, in combination with the partly open top and the furnaces for the purpose set forth.

[A notice of this invention will be found in another column.]

FEEDING DEVICE FOR CROSS-CUT SAWING—Jeremiah Darling, of Cincinnati, Ohio: I claim the reciprocating table, F, suspended at one end, and supported by rollers at the other, to facilitate the operation of cross-cut sawing, substantially as set forth.

RAILROAD CAR SPRINGS—Andrew M. de Hart, of Reading, Pa.: I claim the combination of the semi-elliptic plate springs, a a a and b b, as arranged with the box, C, press block, D, and connecting rod, E, substantially in the manner and for the purpose fully set forth.

RING BOLT—George W. Devin, of Ottumwa, Iowa: I do not claim separately a slide bolt and spring, for that is a common and well-known fastening.

But I claim the slide bolt, A, provided with the spring D, and ring, C, and secured to the door substantially as shown, in combination with the socket or nosing, E, provided with apertures to receive the shackle of a padlock, the whole being arranged as and for the purpose set forth.

[A full description, with an engraving of this invention will be published in a few weeks.]

DEVICE FOR GOVERNING LATERAL MOTION OF CARRIAGE IN GIGGING BACK, IN CIRCULAR SAWING MACHINES—William M. Ferry, Jr., of Ferrysburgh, Mich.: I claim providing a short auxiliary rail, I, alongside the inner rail of the log carriage, C, and opposite the oblique inclined gage bar, G, and furnishing the carriage with an auxiliary wheel, J, which has a vertical axis, a, and having said wheel come in contact with, and run against, the side of the auxiliary rail, and thereby prevent any lateral movement of the carriage other than that necessary to prevent the log rubbing against the face of the saw, and heating the same, and also avoid the scratching of the face of the board by the teeth of the saw, substantially as and for the purposes set forth.

[A description will be found on another page.]

CASTING CAR WHEELS—David Finley, of Champlain, N. Y.: I do not claim the heating of molds in an oven or muffle before pouring the metal into them.

Nor do I claim the annealing of castings in their molds, when that is effected by placing the molds in an oven, or any receptacle that has been previously heated.

But I claim the heating of the knowel and cope of the flask, and parts of the mold contained therein, separately from the chill ring, then putting the whole of the flask and mold together, and either placing it in a box, or its equivalent, and surrounding it with non-conducting material within the said box, and after pouring the metal into the mold, burying the whole in a pit, or omitting the box, surrounding the flask and mold with the non-conductor in the pit, substantially as specified.

[The several parts of the mold, with the exception of the chill, are heated in an oven, and then when placed together with the chill, they are in a condition to receive the molten metal. The complete mold is placed in a suitable receptacle, and surrounded by a non-conducting substance, and then covered up in a pit. The metal, when poured into a mold which has been thus heated, and surrounded by a non-conducting substance and buried, is cooled so slowly as to be thoroughly annealed, and yet the proper operation of the chill is not interfered with, as at the time of pouring in, the chill ring is comparatively cold.]

HARVESTERS—R. H. Fisher, of Claremont, N. H.: I claim, first, Mounting the main frame, A, on the axle, B, so that the frame may slide freely thereon, in connection with the spirally slotted collar, K, placed on the axle, and receiving a pin, k, attached to the axle, substantially as shown and described, whereby the mechanism which operates the sickle may, when desired, be readily thrown in and out of gear with the driving wheel.

Second, Raising and lowering the sickle, J, by means of the pulley, M, placed loosely on the axle, B, and the chain, l, attached to the back part of the main frame, and to the pulley, substantially as described.

Third, Attaching the finger bar, P, to the main frame A, by overlapping the end of the finger bar and the lower end piece, n, of the main frame, the finger bar resting on a semi-spherical projection, o, on the end piece, and adjusted by the screws, p, substantially as and for the purpose set forth.

[In this harvester there is a novel means employed for driving the sickle; the frame is also so arranged that it may be readily raised or lowered, and the mechanism which operates the sickle thrown in and out of gear with the greatest facility. The finger bar is attached in the main frame in a new way, so that the front edge of the finger bar and sickle may be more or less elevated, as circumstances require.]

VAPOR LAMP BURNERS—C. A. Greene, of Boston, Mass.: I do not claim a ring or collar having holes through it, turning upon the outside of a shoulder having corresponding holes through it, to form a regulator for a fluid lamp, as this is an old device and cannot be made to operate successfully.

But I claim the combination of the hollow spur, susceptible of being turned in either direction, and having slits or apertures formed in it with the cap, d, through which similar slits or apertures extend, as described, and for the purpose of regulating the jet or jets of flame by the turning of the said spur.

WASHING MACHINE—Ashman Hall, of Dansville, N. Y.: I claim, first, constructing the slats or bars which form the rubbers with spiral grooved and ridged surface for the purpose described.

Second, In arranging the spiral grooves and ridges formed on the slats, so that they incline in opposite directions in each succeeding slat for the purpose set forth.

Third, The combination of the dipping scoop with the vibrating rubber, arranged as described for the purpose set forth.

BRACES OF EAVE TROUGHS—Wm. H. Henderson, of Franklin, Ind.: I claim the arrangement of the brace, A, as constructed in the trough, and with the pins, a a, for the purpose set forth, and also this arrangement in combination with the strap, C, for the better security of the trough as is fully described.

BILLIARD TABLE CUSHIONS—Geo. W. Holman, of New York City: I do not claim an elastic cushion for billiard tables, but I am not aware that a whalebone facing has ever before been applied to said elastic cushion, whereby the new and useful results specified are attained.

Therefore I claim the whalebone facing to the elastic cushions of billiard tables substantially as and for the purposes specified.

QUARTZ CRUSHERS—Wm. H. Howland, of Sacramento, Cal.: I do not claim broadly the raising of a pestle or weight by having a horizontal cam acting upon a pulley or circular disk on its end or shaft, for this is a device that has been previously used for analogous purposes for operating rock drills, &c.

But I claim, first, the arrangement and combination of the annular mortar, A, and pestles, J, substantially as and for the purposes set forth.

Second, Having an annular feeding chamber between the upright, C, and the inner surface of the cylinder, L, arranged substantially as and for the purposes set forth.

[See another page for a description of this improvement.]

SEED PLANTERS—James J. Johnston, of Alleghany, Pa.: I claim, first, the arrangement of the flexible bottoms, b, springs, c, rod, d, and division piece, e, in the seed chambers, a, as herein described and for the purpose set forth.

Second, The arrangement of the depositing tube, g, with lugs, t, share, h, rod, i, lever, j, and sliding gate, k, as described and for the purpose set forth.

LAMPS—Edward F. Jones, of Boston, Mass.: I claim securing the chimney to the removable cap, and both of them to the lamps by means of a spring operating in the manner substantially as set forth.

REVOLVING FIRE ARM—Benj. F. Joslyn, of Worcester, Mass.: I claim revolving the cylinder, B, by means of a slotted spring clutch cylinder, D, operated by a lever, G, as described.

[The nature of this invention consists in combining and arranging a series of parts in such relation to the hammer shaft as to enable it to operate upon the same in such a manner as to not only revolve the required distance by the act of cocking the hammer, but also secure them firmly while in communication with the stationary barrel, and also in making the ramrod susceptible of being increased or diminished in length and operating it by a duplex motion.

SMUT MILLS—John C. Kelley and Amos Frost, of Edinburgh, Ind.: We claim, first, the arrangement of the hopper as constructed with the air passage, F, in the manner herein set forth and for the purpose described.

Second, We claim the peculiar arrangement of the scourer as constructed with the air passage, D and C, connecting spout, a, and fan, B, for the purpose of separating the smut from the wheat as fully set forth.

SEEDING MACHINES—James F. Kierstead, of La Porte, Ind.: I do not claim separately the adjustable perforated bar, E, nor the reciprocating bar, G, with its pendents, h, attached, for such devices or their equivalents have been previously used.

But I claim the reciprocating bar, G, provided with the pendents, h, and the adjustable perforated bar, E, in combination with the bar, L, the parts being arranged relatively with each other and the discharge openings, c, so as to operate as and for the purpose set forth.

[The object of this broadcast sower and coverer is to prevent the distributing device from becoming choked; to ensure a perfect and even movement of the same, and one that may be regulated to discharge more or less seed from the hopper in a given time as required: and further to obtain a perfect covering device, one that will conform to the inequalities of the ground and be under the perfect control of the driver.]

CORN HUSKER—Chas. N. Lewis, of Seneca Falls, N. Y.: I claim the combination and arrangement of the lever, H, tilting arm, I, blade, C, and yielding gauge, D, operating conjointly substantially in the manner and for the purpose described.

MOWING MACHINE—Henry Marcellus, of Amsterdam, N. Y.: I claim attaching the main frame, D, of the machine to the axle, A, by connecting the frame by means of journals, c d, to the sleeve or collar, C, which is placed loosely on the axle, A, substantially as and for the purpose set forth.

[This invention consists in a novel way of attaching the main frame of the machine to its axle, whereby the sickle is allowed to conform to the inequalities of the ground without at all affecting the perfect operation of the driving gear, and the machine as a whole rendered extremely simple and effective.]

PUNCHING METALLIC TUBES—Benj. Mackerley, of New Petersburgh, Ohio: I claim the combination of the mandrel, a, the punch, d', and the detent, j, substantially in the manner and for the purpose set forth.

I also claim the use of the gouge-shaped wedge, k, in combination with the mandrel, a, and the punch, d', substantially in the manner and for the purpose as set forth.

AUTOMATIC LATHE—John McNary, of Brooklyn, N. Y.: I claim the sliding or traveling lathe heads, K L, between which the stick to be turned is centered in combination with the rotary cutters, c, when the above parts are arranged to operate as shown, viz., so that the stick will be gradually fed to the cutters until the desired form is given it, and then its feed motion stopped and the stick rotated, so that a perfect symmetrical form may be given it.

I further claim giving the feed and return motion to the stick to be turned, and also rotating the same from the cutter shaft, B, by means of the screw, g, on said shaft, worm wheel, h, on shaft, F, in connection with the gearing, w a' b', screw, d', worm wheel, e', and the screw, p, on shaft, G, together with the gearing through the medium of which the screw shaft, I, is rotated, the above parts being used in connection with the lever, H, and the catch, n, rod, a, and with the pawls, l' n', actuated by lever, O, and pinion, u', the whole being arranged to operate as and for the purpose set forth.

[See notice of this improvement on another page.]

STEAM BOILERS—James Montgomery, of Brooklyn, N. Y.: I do not claim vertical tubes in boilers connected with water spaces above and below except under an arrangement like that set forth, viz., where the lower water space is immediately over the fire, and the draft of the furnace returns over said space and among the tubes as set forth.

That is to say, I claim the arrangement of the series of tubes placed vertically or nearly so between an upper and a lower, and connecting vertical waterspaces, when said lower water space is made directly over the fire chamber and the draft is returned over said lower space and among the vertical tubes as set forth.

Second, And I also claim the arrangement of the shield plate in combination with and interposed between the crown sheet of the furnace and the lower ends of the series of water tubes, substantially as and for the purpose specified.

ARRANGEMENT OF GAS ENGINES—John C. Fr. Salomon, of Baltimore, Md.: I claim, first, arranging all the parts necessarily employed in generating and working gaseous vapor within a tight chamber which is supplied with oil, hot air or other suitable heating medium, substantially as and for the purposes set forth.

Second, The employment in combination with the above named tight chamber, of the combined arrangement of fire flues, smoke stack; circulating coil, boilers, vapor chest, and cylinder for accomplishing the objects above specified, substantially as set forth.

[See description of this invention on another page.]

CHUCK FOR SCREW CUTTING—Richard Nuttall and John Kirkpatrick, of Alleghany, Pa.: We claim, first, the projection, j, on the movable die seats, and the transverse slot or notch, k, in the removable cutting dies, the one being adapted to the other as described and for the purpose set forth.

Second, The use of the troll plate when constructed as specified, and operating in connection with the die seat and die as set forth.

FLUID METERS—Wm. C. Perrine, of New York City: I claim making the measuring chambers gradually larger in each direction from near the middle, where the exterior edges of the diaphragms are fastened substantially as described, so that the diaphragm will be held by the water or remain in contact with the part so enlarged until it is drawn away by the center of the diaphragm or by the plates which move and traverse with the center of the diaphragm.

I claim the recesses, P P, in the ends of the measuring chambers, in combination with the plates, H H, arranged to work into them (the said recesses.)

I also claim the openings, w w, in the plates, H H, provided with valves, or such equivalent openings as will well answer the same purpose.

I claim making recesses, p p, with their sides parallel, in the flanges, T T, so that that portion of the diaphragm in or opposite to said recesses, may vibrate a very little, between the measuring chamber and the line where it is bound or held firmly by the flanges.

HOISTING MACHINES—Reuben Packard, of Rockland, Me.: I claim the circular plate or its equivalent, arranged substantially as described, in order that it may be turned easily and held in any desired position by pawls or their equivalents, for the purpose of sustaining any combination of mechanical powers constructed thereon, for drawing or lifting heavy weights or their equivalents.

CAST-IRON PIPES—Clifford Pomroy, of Pottsville, Pa.: I claim a cast-iron pipe chilled inside, as a new article of manufacture, for the purpose of conveying fluids impregnated with or containing substances which soon destroy iron pipes which are not so chilled.

CEMENTS FOR ROOFING—Richard Simons, of Rock ford, Ill.: I claim the composition of ingredients when compounded in the manner set forth.

DEVICE BY WHICH THE WIDTH OF THE BOLT CHECKS THE FEED IN SHINGLE MACHINES—A. C. Sawyer, of Canton, N. Y.: I do not claim the use of a race bar, N, nor do I claim or limit myself to the use of a rack and pinion feed, as a screw or chain could easily be substituted; nor do I limit myself to the particular place in which the lever, L, hangs, whether before or after the saw.

But I claim the use of a lever, L, hanging by the side of the saw in such a manner that the bolt in running under it will raise or lower it, and adjust the travel of the carriage, for the purpose and in the manner substantially as set forth.

SEWING MACHINES—E. Harry Smith, of New York City: I claim arranging the cranks and connections to the needle and shuttle in substantially the manner set forth, whereby the differential movements are imparted to the needle and shuttle in the alternating manner described.

VENTILATING AND EXCLUDING DUST FROM RAILROAD CARS—A. B. Spencer, of Rochester, N. Y.: I claim the revolving wet sheet or endless apron (passing through water) for the purpose of cleansing and purifying the air as it passes into the car, which sheet or apron, together with the tank containing the water, and that portion of the bottom whereon it rests.

I claim as a partition, by which I divide the instrument into two complete ventilators, either of which as set forth will act as the downward ventilator, while the other always acts simultaneously in the opposite direction.

GAS GENERATORS—Wm. N. Taylor, of Philadelphia, Pa. I claim, first, The combination of the retort, with a series of movable partitions connected so that all can be taken out together, and so arranged as to divide the retort into a series of chambers through which the gas circulates in its passage from the lower chamber to the discharge pipe, for the purpose described.

Second, Dividing these chambers by means of punctured diaphragms or their equivalent, arranged as described, in order to retard the passage of the gas, and bring the entire volume in contact with the heated metal for the purpose described.

LAMP ATTACHMENT FOR PREVENTING SMOKE, &C.—Ralph Thomas, of Hoboken. N. J.: I claim the movable cap provided with a schreved screen top A, and base piece, C, when applied to lamps, constructed and operating as set forth and described.

TYMPANS FOR PRINTING PRESSES—L. T. Wells, of Cincinnati, Ohio: I claim attaching the cloth or parchment, B, to the frame, A, of the tympan, by means of the leather strips, c, provided with eyclets, d, said strips, c, being fitted in grooves or rebates in the frame and the cloth or parchment attached to the strip of the lace, C, substantially as described.

[A notice of this improvement will be found in another column.]

HARVESTERS—Lewis Miller (assignor to C. Aultman & Co.) of Canton, Ohio; I claim so hinging the bar or beam which carries the cutters and fingers to the beam, L, as that it may be raised up, folded over, and carried upon the main frame, substantially as described.

I also claim, in combination with the beam, L, hinged as described, the braces, N S, rigidly connected therewith, but hinged at their opposite ends, so that the beam, L, may rise and fall at pleasure, but be permanently braced in its proper position to give the cutter and finger bars or beams in turn their proper working position, as described and represented.

HARVESTERS—Lewis Miller (assignor to C. Aultman & Co.), of Canton, Ohio: I claim, in connection with the inner shoe, an adjustable supporting wheel, when said wheel is in advance of the point of the divider or shoe, as set forth.

HARVESTERS—Lewis Miller (assignor to C. Aultman & Co.), of Canton, Ohio: I claim so combining a reel, with a platform and main frame that are hinged together, as that the raising and lowering of either shall not in any wise injuriously affect the rotation and uniform action of the reel, or change its position with regard to the cutters, for the purpose and in the manner substantially as described.

SHEET METAL CHAINS—James Lancelott, of Cranston, R. I., assignor to Sackett Davis & Co., of Providence, R. I.: I do not claim the making of an ornamental chain from steel metal, neither do I claim the weaving of a chain by turning over the arms of each link upon the body of the next link without the use of solder.

But I claim the forming of the body of each link into a dome disk or cap, so as to admit of the projecting arms of each link being bent at a very acute angle against the sides of the dome or cap of the next succeeding link for the purposes specified.

BOOT TREES—Wm. W. Willmott (assignor to himself and H. F. Gardner), of Boston, Mass.: I claim in the application of the screws, the rod and toggles (or mechanical equivalents) to the front and back portions, A B, of the leg of a boot tree, the arrangement of the two sets of toggles as shown in the drawings; and the application thereto of the screw rod, H, in such manner that it may be free to move longitudinaliy during its rotary motions on its axis, the same being for the purpose as specified.

I also claim combining the regulator or latching mechanism, N, e e (or their equivalent) with the back and front parts, A B, of the leg portion of the boot tree and the separating mechanism applied thereto, and made to operate therewith, substantially as described.

SAWING MACHINE—H. S. Vrooman, of New York City, assignor to Henry Albro, of Covington, Ky.: I do not claim, broadly, the sawing of logs or bolts in volute form, for this has been previously done.

But I claim, first, The traveling or sliding collar M, on lever, E, as connected with the knife or saw frame, B, the pawl arms, N N, in combination with the recip-

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rocating connecting rod, G, the vibrating lever, E, the pawls, w w', and the ratchet wheel, O, whereby an increasing rotary speed of the log or bolt, U, is obtained from the traveling collar, M, passing down to a wider sweep of lever, E, as set forth, the power being transmitted from the ratchet shaft, P, to the bolt U, as shown, or by any other equivalent device, for the purpose described.

Second, The cutters, p, attached to the carriage, L, operated automatically by and in combination with the vertical screws, for the purpose set forth.

Third, The lateral moving knife plate or stock c, crank D, operated by and in combination with the vibrating lever, E, for the purpose shown.

Fourth, The combination of the knife, C, cutters, p, and the feed movement of the bolt or log, U, when the whole are arranged to operate as and for the purpose set forth.

RE-ISSUES.

SIRUP CASTERS—Edmund Bigelow, of Springfield, Mass. Patented April 6, 1858: I claim the combination of a self-measuring faucet and air tube with each of two or more reservoirs for sirup or like fluids, the reservoirs being on a common base forming a caster, substantially as and for the purpose specified.

HARVESTERS—Charles Crook, of New Hope, Pa. Patented May 5, 1857: I claim, first, Operating and changing the speed of the cutters by means of the internally geared wheel, I, and spur wheel, D 2, in combination with the pinion, J, the same being arranged and rendered adjustable, substantially as set forth and for the purpose specified.

Second, Connecting the rod, G, to the end of the lever, F, by means of the swivel joint, i, when the said joint is situated at or near the center of vibration of the cutter frame.

BAGASSE FURNACES—Abraham Hager, of Baton Rouge, La., and Youngs Allyn, of New Orleans, La. Patented May 6, 1856: We make no claim to the insertion in Bagasse furnaces of a grate inclining from the front of the furnace to a position under the exit flue for the products of combustion, as the operation of such grate will be different from what is designed to be effected by our construction.

But we claim inserting in the furnace a skeleton dome rising above the exit flue, so as to arrest the fall of the wet bagasse, and for a limited time retain it above the fire, without obstruction to the draught for the furnace, substantially as set forth.

BOXES FOR RECEIVING PASSENGERS' FARES—John B. Slawson, of New Orleans, La. Patented July 28, 1857: I claim a fare box having two compartments, into one of which the fare is first deposited and temporarily arrested previous to its being deposited in the other when the former is provided with glass sides, so arranged that the passengers can see through one, and the driver or conductor through another, in the manner substantially as and for the purposes set forth.

DESIGNS.

COOKING STOVES—Russell, Wheeler, and Stephen A. Bailey, of Utica, N. Y.

CLOCK CASE FRONTS—Samuel B. Jerome, of Waterbury, Conn.

Wear of the System by Railway Traveling.

Now that all the world travel by railways, it is a circumstance of universal interest to determine what influence railway traveling exerts upon the health of the community, and more particularly since a suspicion has arisen that the great rate at which an express train runs produces an injurious effect upon the mind. A paper upon this subject, read before the Royal Society by Dr. Smith, contains some curious information, according to the London *Engineer's* abstract of it.

Dr. Ed. Smith, the author of the paper, is one of the physicians attached to the hospital for consumption and diseases of the chest, at Brompton, England. The plan he adopted was to determine the effect of railway traveling upon the respiration and pulsation, on the principle that the wear of the system will be in proportion to the activity of those functions. Dr. Smith, therefore, traveled repeatedly in each of the three classes of English railway carriages, and upon the engine, and at various rates of speed, and the influence on the quantity of air breathed was ascertained by the use of a spirometer. The greater part of the experiments were made upon the broad gage, but some were prosecuted on the narrow gage. The result of seventy-three series of experiments went to show that the greatest wear on the system occurred whilst sitting upon the engine. The precise average increase of air inspired was about 250 cubic inches per minute on the engine, 200 cubic inches in the second class, and 150 cubic inches in the first class; but, on many occasions, the quantity of air breathed in a first class carriage was scarcely more than would have been breathed when sitting quietly at home rocking in an easy chair. Upon the whole, the wear of system may be be better understood by stating, that, five hours of railway traveling in a first class carriage are equal to six hours quietly sitting at home; or upon the engine, to eight hours. As compared with the old coach traveling, it is vastly lessened taking distance for distance.

In reference to the speed of the train, Dr. Smith found that the greatest wear was not with the greatest speed of fifty-five miles per hour, but at a rate of from thirty to forty miles per hour. The effect varied much at the same speed in different carriages of the same class; but there was the greatest constancy in the first class and the least upon the engine. The general expression of the results of the inquiry was, that the quantity of air breathed was as the oscillation of the body and not as the speed, except so far as that speed and inequality of road tended to induce greater oscillation.

It was rendered very evident that traveling in our days is very far less an exercise than it was in the days of our forefathers. It was also proved that of all modes of traveling, none is so inexpensive to the system, so fitted to the necessities of invalids, as that of British first class railway carriages; and that traveling in private carriages on the common roads, hour for hour, and distance for distance, induces a far greater amount of wear. This is a very cheering result, as showing that one of the greatest improvements of the age is tending not only to the comfort but to the health of the community.

In our country there is neither first, second nor third class railway carriages—all are equal on the train. The first class carriages in England are for the superlatively rich, and are very comfortable, but not much more so than some of the carriages on our railroads. Railway traveling in England is smoother than with us; there is therefore less oscillation on the railroads in that country, consequently there is more wear of the body in traveling on our railroads. The improvement in ease and speed is incalculable in comparison with traveling on the old stage coach.

Science and Justice.

The SCIENTIFIC AMERICAN, in commenting on the case of an individual who had robbed a roost by giving the hens chloroform, answers the query, "when thieves get scientific, what should the police do?" by referring the latter to its own columns. There is a great deal of common sense in this remark. The time may not be as yet, but it will be when science will be the strongest arm of the detective.

We find in a late English magazine a curious instance of the extreme point of delicacy to which chemical tests have been carried. A professor ascertained accurately into which one of a number of basins of water a lady had dipped her finger. The well-known story of the detection of a railroad robbery by Ehrenberg, opens a wide field of scientific research for philosophy in aid of justice. The microscope which reveals the smallest points of identity, if once fully used, might often establish connections of which ignorant ruffians would never dream—the very mud on a man's boots being enough to identify the connection of person and place, when examined by an experienced microscopist. The utility of photography and the telegraph in detective service is already recognized, and an even careless perusal of Berk's or Stille's Medical Jurisprudence cannot fail to convince the reader that the whole subject of the application of science to justice is of itself a science as yet in embryo, yet one which is perfectly capable of developing to a degree which would vastly increase the perils to which crime is at present liable. If one *great* mind could devote all its powers to this end, it would do as much for justice, peace, and order, as any which the world has ever witnessed. There is no reason why as much talent and education should not be devoted to the practical execution of the law as to punishing the guilty; in fact, we may say that the perfection of the former would be *preventive*, while the latter is only curative. At present, native unaided talent and experience are almost the sole qualifications employed in identifying malefactors. This is not enough. Reduced almost to certainty, this branch of justice would cast a terror over rogues which would be of the greatest service to humanity.—*Philadelphia Bulletin.*

A child was poisoned, in Norfolk Co., Va., through sucking the flowers of the yellow jessamine, and died within one hour after tasting them.

In one parish in England not less than $4,000 are expended annually by the working classes for laudanum.

Secret of Horse Taming.

On the 21st of last month, at Astley's Amphitheatre, London, Mr. Cooke, the colebrated equestrian, undertook to exemplify Rarey's system of subduing vicious horses, and as a consequence there was a crowded house. The *Morning Advertiser* states that Mr. Cooke informed the audience, when the exhibition opened, that he was ready to tame any horse that was brought to him, and a vicious hunter which had been sent for this purpose was then taken into the ring. He then took a strap and attached it to the fetlock of the animals' right foreleg, brought it over its right shoulder and held it firmly by hand. The left leg was then doubled up inwards till the hoof was brought in contact with the thigh, when it was tied in that position with a strap. Mr. Cooke then took the reins of the bridle in one hand, and the strap attached to the horse's right leg in the other, and holding them taut, urged the animal to walk on three legs, with his head inclined to the left. The horse was made to walk in this manner three times round the ring of the circus, when he exhibited signs of great exhaustion, got down on his knees, and finally lay down in the most submissive manner. The straps were then taken off, and Mr. Cooke lay down upon him, patted him, and the animal received these caresses in the most docile and quiet manner, and appeared to be perfectly under the control of his tamer.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims:—

TYMPAN FOR PRINTING PRESSES—L. T. Wells, of Cincinnati, Ohio, has invented an improved method of attaching the cloth or parchment to the tympan frame. He inserts in the frame strips of leather with eyelets, and to these the cloth or parchment is secured by lacing. It can be easily attached or removed, and forms a great convenience to the printing office.

TURNING MACHINE.—John McNary, of Brooklyn, N. Y., has invented an improved turning machine for shaping regular or cylindrical ornamental forms, such as newels, ballusters, and similar beaded or ornamental work. The invention consists in a peculiar arrangement of means for operating rotary cutter stocks, and traveling heads, between which the stuff to be turned is centered, whereby the machine is rendered automatic in its action throughout, and made to work rapidly, and in the most efficient manner.

SAWING MACHINE.—H. S. Vrooman, of New York, has invented a machine for sawing timber or logs spirally or in volute form in one continuous piece from the periphery to the center. The invention consists in a peculiar arrangement of means for operating a reciprocating knife or saw, and giving the same a proper feed movement towards the log or stuff being sawed, and also in giving the log or stuff which is centered between arbors, a gradually progressive rotating speed, so as to compensate for its gradually diminishing diameter while being sawed, and thereby allow the knife or saw to cut the log or stuff in spiral or volute form from periphery to center, or nearly to the center in a single or continuous piece. The invention is designed for sawing thin stuff, such as is used for the backs of mirrors, boxes, veneers and other purposes. The inventor has assigned his invention to H. Albro, of Covington, Ky.

MACHINE FOR BENDING WOOD.—Thomas Blanchard, of Boston, Mass., whose invention of a machine for a similar purpose we noticed on page 240 of the present volume of the SCIENTIFIC AMERICAN, has invented certain improvements relating to a device by which wood is bent in the desired form without having its fibre distended longitudinally, so that the strength of the wood will not be impaired in consequence of being bent. The invention consists in the employment of a rotating pattern or mold with a metallic strap attached, used in connection with a sliding pressure bar, having an adjustable stop fitted to it, the outer end of the metallic strap being attached to the sliding bar, and the whole arranged so as to form a simple and efficient machine.

QUARTZ MACHINE.—W. H. Howland, of Sacramento City, Cal., has invented a machine for this purpose, the object of which is to obtain a very compact and efficient machine, and one that will not easily get out of repair, and having its parts so arranged that each will perform its full portion of the work to be accomplished. The machine is designed for crushing auriferous quartz, and consists of a series of pestles placed within an annular mortar and around a feeding spout, the pestles being operated by a horizontal double inclined cam, which acts against circular disks attached to the pestle rods, so that the pestles will be rotated as they are raised by the cam. There is also in connection with the above parts a screen and pulp trough, for the purpose of better separating the crushed materials.

BRICK KILN.—This invention obviates many serious objections which are experienced in the burning of brick in ordinary kilns. The most prominent among these are the rapid destruction of the grates or furnaces, choking up the throats of the furnaces by the collection of charred fuel thereat, difficulty in burning the "heads" or sidewalls of the kiln to the same degree, within a given time, as the body of the same; also the unequal diffusion of the heat throughout the entire kiln from the side walls to the centre, and a too rapid escape of the heated flame or current directly up between the bricks forming the stands and arches; want of facilities for controlling the flame or heat, so as to equalize the heat at all parts of the kiln; loss of heat from the escape into the open air of partially ignited smoke or gases emitted from the fuel of the furnaces. We regard this as a first-rate improvement, and as a step in advance of anything we have seen in this line. The inventor is J. W. Crary, of New Orleans, La.

GAS ENGINE.—In using the vapors of gaseous liquids as a motor, it is found that owing to the vapor being so rapidly generated or thrown off by the action of heat, and as readily condensed by contact with surfaces of less temperature than themselves through which they circulate that unless a uniformity of heat is maintained throughout the whole heating and working arrangement, great loss of effective power, as well as an irregular and unsteady working of the engine, will be experienced. The object of this invention is to avoid this loss of power, and to maintain a uniform pressure of vapor, and consequently effect a regular and steady working of the engine which is accomplished by diffusing, by means of a heating medium enclosed within a tight chamber, an equal heat over the whole surfaces through which the gaseous vapors necessarily have to circulate in order to exert their force upon the piston. The inventor is J. C. Fr. Salomon, of Baltimore, Md.

SAW MILLS.—In saw mills which have the carriage arranged to run upon friction wheels having a lateral movement by means of offset boxes from toward the saw while gigging back, and which have the feeding head blocks, feed automatically by means of an oblique inclined gage bar and ratchet lever, inaccuracies are experienced in the thickness of the boards sawed. This difficulty arising from the wear of the boxes and track, and the consequent chance allowed the carriage of being forced from the saw, when the feeding ratchet lever comes suddenly in contact with the inclined gage bar, and is resisted by said bar in a manner to effect the feeding of the head blocks, and yet, at the same time, to pull over the carriage head blocks and log the same distance as the wear of the boxes and rails will allow. This invention of W. M. Ferry, Jr., of Ferrysburg, Mich., which is clearly defined by the claim, completely obviates the above objections, and therefore will prove a valuable auxiliary to self-setting saw mills.

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New Inventions.

Manufacture and Reduction of Platinum.

W. S. Newton has recently obtained a patent in England for improvements in the manufacture and reduction of platinum. The platinum ore to be operated upon is rinsed in a state of division with lime, baryta or strontia, magnesia, or other carbonates. This mixture, on being roasted in the open air, will be deprived of the greater part of the osmium which it contains. The ore is afterwards melted in vessels, the inside of which are lined with lime, baryta, strontia, magnesia, or the carbonates of these bases, and this fusion is effected by means of a combustible gas in combination with oxygen.

Oilcloth to Imitate Leather.

A patent has lately been secured in England by J. J. C. de Clerville, for the following method of making ornamental oilcloth. Instead of first painting or printing with oil colors on a white ground, as is usually done, he employs cloth which has first been printed upon, or dyed like calicos, and on this he puts a transparent ground or coating, by applying several coats of clarified linseed oil, rendered "drying" in the usual way with sulphate of zinc or acetate of lead. When this transparent coating is dry, it is rubbed smooth with pumice stone, and a hard varnish put on the top—copal varnish is employed for light colors, and asphalt varnish for black glazed cloth.

Extraction of Copper from Ore.

Lewis H. Parrish and R. M. Roberts, have secured a patent in England for improvements in the separation and extraction of copper from its ores. The object sought is the chemical treatment of copper ores, so as to obtain a greater per centage of pure copper from the ore, and also to render available refuse ore. The ore, if large, is broken up into lumps of about two or three inches cube. These are then placed in a furnace, calcined, and kept at a dull red heat. After being sufficiently roasted, the ore is withdrawn from the kiln through a trap underneath, and instantly passed through two pairs of ordinary crushers, the first pair of which will reduce it into small lumps, and the second will pulverize it. While still hot it is next plunged into an acid bath made of lead or slabs of slate, to stand heat. This tank is placed inside an iron tank containing water, and fire is applied to the bottom of the water tank; the solution is to be kept within a few degrees of boiling point. The ore must be kept frequently stirred. When the solution has taken up all the copper, it should be drawn off through a filter into a second tank, containing iron to precipitate the copper. The tank is to be kept warm by a low heat under the bottom. When the whole of the copper has been precipitated, the solution may be carefully drawn off into another vessel, and is then ready to be rinsed after adding fresh acid. The precipitate left in the tank is then thoroughly cleansed with water, laid upon a drying stove, thoroughly dried, and is then ready for melting.

New Patent Plow.

The advantages of having plows constructed so that their shares and mold-boards can be adjusted laterally and vertically, and thus take more land, or give a greater depth of furrow, as required, are now fully appreciated by the farmer; our engravings illustrate a plow—invented by T. Sanford, of Redding Ridge, Conn.—which fulfils these conditions.

Fig. 1 is a perspective view, and Fig. 2 a top view of this plow, in both of which A is the land side, B is the mold-board, and C is the standard. To the mold-board and land side are secured by screws and nuts, *a*, two inclined bars, D, of wood; they are connected by the cross bar, E, and bolted to the bars, F, by means of bolts, *c*, near the handles, *b*. The bars, F, meet together in a socket, *d*, where they are secured by a screw, and this socket has an eye, *g*, cast in it, through which passes the bar, H, provided with the ring, *h*, to which the horses are attached. On the bar, H, is a screw and two pieces, which can be moved along, and as they grasp the coulter it can be fixed in any position. H passes through the standard, C, and terminates in a screw nut, *f*. A piece of iron bar bent to a V-shape is passed under H, and each branch is secured by a nut and screw on its end to one of the bars, D, at *e*, and from the top of the standard, C, rise bars, *i*, to F, of wood, and adjustable iron bars also. The use of all these braces and

SANFORD'S IMPROVED PLOW.

Fig. 1.

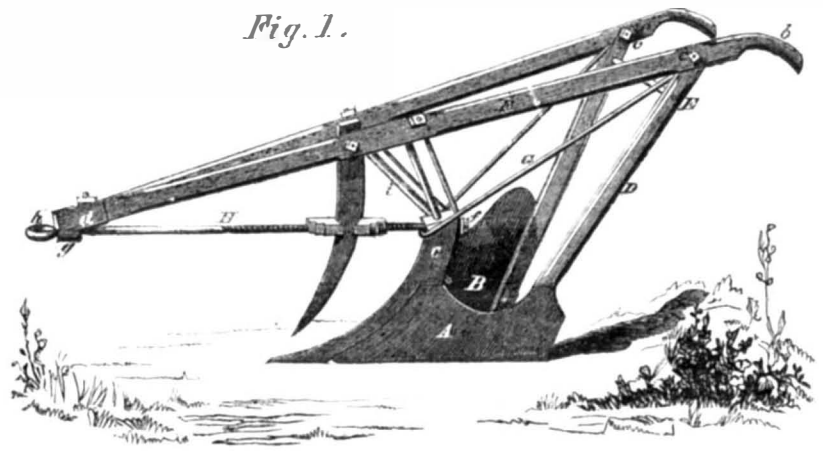
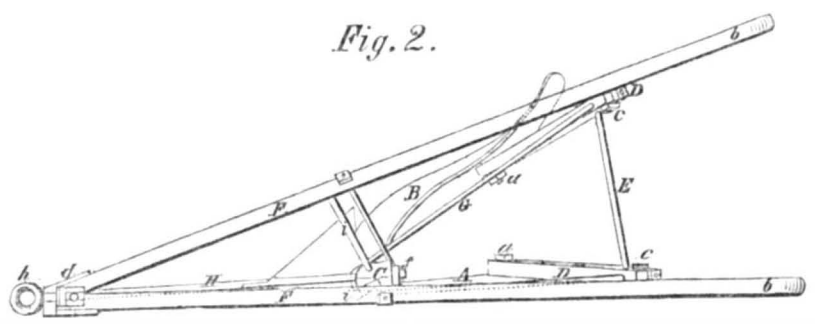


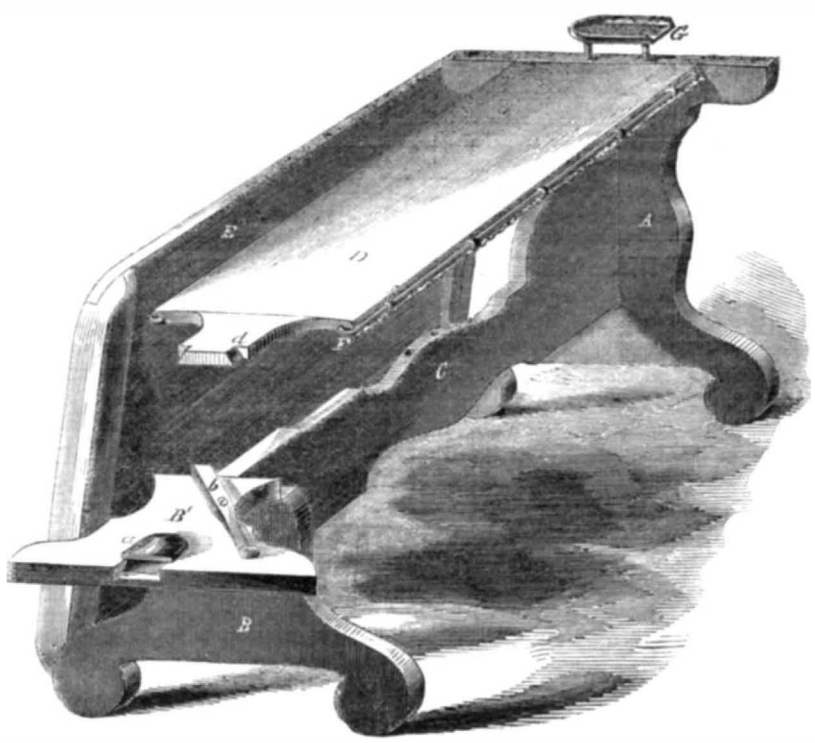
Fig. 2.



tie bars is very obvious; if it is desired to give more land to the plow, then the arm of G next the mold-board is slackened, and the other arm is tightened; and should less land be wished, then the opposite side is tightened, and the land side slackened. If a greater depth of furrow is required, the nut, *f*, is slackened, so as to let the point be placed at a greater angle with the surface of the ground, and the straining bars, *i*, are moved a hole nearer the handles on F, which have a number of holes perforated in them, wherein to fix the straining bars for the various depths of furrows required.

A patent was obtained for this excellent plow February 23, 1858. The inventor will be happy to furnish any further information upon being addressed as above.

VANDENBURGH'S IRONING TABLE.



The method usually adopted by laundresses for ironing shirts, skirts and similar garments is to lay the ironing board across two chairs, and by lifting up one end pass the garment off or on as the case may be. The table which is the subject of our engraving is intended to supply a good firm ironing table that will easily admit of articles being placed on or off it, and at the same time serve the purpose of an ordinary table when required.

A is a leg, to the top of which one end of the table is rigidly secured. A is connected by a crosspiece, C, to another leg, B, the upper half of which, B′, is movable on a hinge and has a groove in it, *a*, to receive the end, *d*, of the table, D. In the position which it has in the illustration, the shirt would be put on, and the piece, B′, turned to its place and secured by the catch, *b*, and a firm table is obtained on which every part of a circular garment can be ironed. The cover is secured to the table by the bar, F, passing through the loops on wire, *f*, that pass through the cloth. G is an iron stand that can be removed to admit of the top, E, being put over the ironing table, D, and render it useful for any household purpose. It was patented April 6, 1856. The inventor, W. Vandenburgh, Jr., of this city, has also applied for a patent for another method of attaining this same end, namely, by causing the top to slide laterally or vertically on fixed supports, so that he will be sure to have the laundress's desideratum, a really good ironing table. Mr. V. will give any further particulars upon being addressed at 313 Spring street, New York.

Colt's Extension.—Curious Rumors.

In our issue of the 1st inst. we announced, upon the strength of a statement which had come to our knowledge, that the Committee on Patents in the House of Representatives had reported strongly against the extension of Colt's patent. Since that date we have carefully examined the proceedings of Congress as they have appeared in the *Congressional Globe*, hoping to see some official confirmation of our announcement. None has appeared; and we are compelled to come to the conclusion that the Committee has not yet fully made up its mind what it will do with this important case.

Rumor—which is not always reliable—says that Colt does not wish the Committee to report at present, all things not seeming to be propitious. The reason given is, that by preventing an adverse report, and thus keeping his case in the pigeon-holes of the committee room from session to session, he can deter competitors—under impressions of fear that his patent may be extended—from engaging extensively in the manufacture and sale of his revolving arm, and thereby reducing the price now paid him for it by government.

We can believe almost anything in these perilous times, but we cannot twist our confidence in the Committee to such an extent as to believe that its members can so stultify themselves and the interests of which they are the appointed conservators, as to compound with any such iniquity. Is it possible that the spectre of a probable extension is to be held *in terrorem* over the heads of those who, besides Col. Colt, have rights in this matter? We cannot believe it. We do not believe the Committee will thus shirk this grave matter. Come forward, gentlemen, and make a report, one way or the other. If you think Colt is entitled to an extension, frankly say so; if not, be equally frank in your opposition. The public interests require such action at your hands, and the sooner this matter can be decided the better.

Shagreen.

The common horny looking covering which we notice on old spectacle cases and surgical instrument cases, of a green colo is of this material. It is prepared from the horse or ass skin, its granular appearance being given it by imbedding seeds in it while soft, and then shaving down the surface; the green used is that produced by the action of sal ammoniac on copper filings. The name is derived from a species of whale, *shagree*, from whose skin it was formerly supposed to be made, when the manufacture was confined to Astracan.

A Compliment.

Among the new members elected at the recent meeting of the American Association for the Advancement of Science we notice the name of Charles F. Loosey, Esq., the Austrian Consul General, who is highly esteemed in New York as a citizen and man of science, and has been largely instrumental in introducing American inventions into Austria.

We are indebted to Hon. John Cochrane, M. C., for a copy of Vol. 6, "Explorations for a Railroad Route from the Mississippi River to the Pacific Ocean."

The Emperor of Austria has presented the great Gold Medal of Arts and Sciences to Lieut. Maury, of Washington, for his contributions to science.

A great number of the silk worms of the south of France are diseased this season.

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Scientific American.

NEW YORK, MAY 15, 1858.

Patent Office Report for 1857.

If an apology were needed for our again approaching the subject of the Patent Office Report distribution, we might refer our readers to the fact that our journal being regarded by inventors as the special advocate and defender of their interests and rights, we are ever watchful and zealous to guard them against such legislative encroachments as the one covered under the resolution reported from the Joint Committee on Printing, and passed by the House of Representatives on the 28th of last month. This resolution provides for the printing of twenty thousand extra copies of the mechanical portion of the Patent Office Report for the year 1857, for the use of the members of the present House of Representatives *only*, being a reduction of the number printed of the preceding year's report of forty thousand. It is not our purpose at this time to object to this retrenchment movement in the reduction of the number, but simply to protest against the exclusive character of the distribution. We certainly think that the Patent Office, which may be regarded as the source to which all inventors look for information, and which may be said to be in direct communication with inventors, scientific societies, and others interested in these reports, should have been allotted at least one-half the number printed, believing as we do, that they would be more generally and properly distributed than when left exclusively in the hands of Members of Congress.

It is a well-known fact that there are thousands of valuable works, including many of the Patent Office Reports of preceding years, now stored away in Washington, and other parts of the country, which were printed by Congress, and allotted to members of both Houses for distribution among those of their constituents likely to be benefited by their possession. Many others have been destroyed or sold for waste paper, or devoted to other comparatively useless purposes. The constituencies of Members of Congress are generally extended over a large space of country, and are included in villages, towns, and localities where the member has no personal acquaintance, and hence it follows that many of the persons for whom documents printed by Congress are specially designed, fail to receive or be benefited by them; and their limited distribution is almost exclusively confined to the locality in which the member resides. We are sorry that the extra number of the Report for 1857 was not divided for distribution equally between the members on the one part, and the Commissioner of Patents on the other. We think our readers will agree with us that under such a division a more faithful and equal distribution of them over the country would have taken place than will be effected by confining this task exclusively to Members of Congress, many of whom will distribute but few, except when a special demand is made upon them.

The Atlantic Telegraph Cable.

By our last foreign exchanges we observe that the skillful electricians having this matter in charge are seriously concerned as to whether, when the cable is successfully laid down, there will not still remain the most gigantic electrical experiment ever made. Will it be possible to send the electrical signals through more than two thousand miles of wire, submerged in the depths of the ocean, and with the requisite speed for the desired purposes? Theoretically, before the experiment of submarine cables was tried, the progress of electricity was supposed to be almost instantaneous. Experience has shown that when a current of electricity is passes through a wire covered with a non-conducting body, and that body is surrounded by a conducting material, a retardation is produced. This is caused by an electrical condition, to which the name *induction* is given, as we have before stated—the cable with its coverings, becoming something like an extended Leyden jar. It matters little in practice whether the conducting covering outside the gutta percha be an iron wire sheath, the sea, or the earth by which it may be surrounded. In each case the phenomenon of induction is found to retard the passage of the electrical signal. The retardation takes place whether the cable be coiled *en masse*, or laid straight and covered by earth and water. At present no one can predicate positively how much greater the retarding influences in the depths of the ocean will be than those created in the coils of the electric cable. Many assert that they will be less, and instance the fact of signals urged by the same battery being transmitted with greater speed through the wires of the Mediterranean cables from Sardinia to Malta, and from Malta to Corfu, when laid straight in the depths of the sea than when coiled on board ship. The distances in these cases are short, however, when compared to the enormous length of the Atlantic cable, and the results mentioned cannot be taken as a guarantee of similar effects being produced upon it.

From experiments made by Mr. Whitehouse through one thousand miles of the Atlantic cable, it was found that about half a second intervened between making a signal at one end and its appearance at the other; and it was thought the difficulty arising from the detention of electricity was overcome. It appears, however, from experiments made through the entire cable a short time ago, that a considerable obstacle to rapid communication arises from that cause. It is asserted that these experiments developed the fact that about two words and a-half per minute only can be transmitted through the entire length of wire, which is about one-sixth the speed with which messages can be sent with the present arrangement of symbols from London to Paris.

The American Association for the Advancement of Science.

A great number of gentlemen, doctors, professors and *savans*, have spent six days in Baltimore for the purpose of giving to the world the results of their year's researches into the ever green fields of unexplored truth; but with a few exceptional facts, the world will be no wiser, and is not any better in an educational point of view, than it was a year ago.

A city cotemporary in an article on this subject remarks that "the labors of this Association have for the last two or three years been of use to no one." Great practical questions of public health and social science have been shirked, and pettifoggying papers upon "the Phylotaxis deduced from the Mathematical Definition of Distribution," haveengrossed the time and talent of the members; the great lights of science are not so active as they used to be, and it is now chiefly in the hands of second-class men, who call each other unpleasant names, and stick to a theory as to their lives; in fact, the Association seems to be going down. Some few interesting experiments were detailed, as for example Mr. A. B. Engstrom stated that he had on one occasion taken a small bell, and rowed out half a mile from the shore, and there submerged the bell to a depth of four inches. Upon its being struck it was distinctly heard upon the shore, thus proving a well known fact, that water is a good conductor of sound. Prof. Walcott Gibbs gave some interesting results of analysis, which had, however, no practical bearing, and Prof. Henry was ever ready with his vast fund of information upon all topics. Beyond this the newspaper reports are filled with professors' names and capital letters, indicating the titles of their owners, and so anxious are *quasi* scientific men for these distinctions that it is proposed to make some initial letters for the use of members of the Association, which we think might well be called "A Society for the Purpose of Encouraging Mutual Admiration."

We are truly grieved to see that so little has been done by these gentlemen for the advancement of *true* science, that science of which they profess to be high priests, the spread of pure knowledge on all subjects among the great mass of the people, and we venture to give them a little advice, which, if they are wise they will take, not as coming alone from us, but as the expression of a large community who truly wish "American Science" to take no second place in the history of the world. The advice is this:—Gentlemen, ignore as far as possible hard words; bring your grand ideas into simple language, and follow the example of Cuvier, Linnæus, Humboldt, Franklin; search for *facts*, not theories; give to the world new truths alone, for depend upon it, every man can speculate enough for himself; whatever you discover, try also and find some practical use for it, for *practical* science is the demand of the age. Do this, and the meeting in 1859, at Springfield, Mass., will be the most successful you have yet had; if not, we much question whether the newspapers will report your august proceedings at all.

French Agriculture and Population.

M. de la Trahonnais has communicated to the Society of Arts at Paris a paper on the agriculture and population of France, in which he takes the position assumed by Malthus, that the increase or decrease of population is exactly in the same ratio as the increase or decrease of the production of food, and ascribes the late lamentable surplus of deaths over births to the insufficiency in the supply of food. The distinguished agriculturist mentions that since 1850 a gradual diminution in the number of births in France has taken place, and that in two years (1854–'55) the statistics exhibit the mournful fact that while every country in Europe showed a comparatively large increase of population, the numbers of the French people had actually diminished by 106,000. In 1856, the importation of agricultural produce, including cattle and meat, amounted to 30,560,000 pounds; and from this fact may be derived the most accurate agricultural statistics in relation to the agricultural deficiency in France during that year.

This continued deficiency in food M. de la Trahonnais attributed to many causes. The manufacture of agricultural implements scarcely exists as an industry in France. The rude implements used by the peasantry are generally manufactured by village mechanics, from old and unimproved patterns, handed down from generation to generation, whilst the annual conscription of 400,000 able and robust young men for the army produces a lamentable deficiency of male labor, and necessarily leaves a large amount of agricultural development to the feeble hands of women and old men. It is not denied that the French peasantry are sound and industrious; their vices are, no doubt, the result in which the system of centralization has abandoned them. They are patient, sparing, religious, and highly moral. Once get the thin edge of progress into their traditions; let a gleam of enlightenment kindle their hard and miserable career; let a little more comfort cheer their homes; let a more extensive range of ambition widen their sphere of activity; let a little more capital improve their land; in short, let them be freed from the burdens and encroachments of government, and encouraged and educated as in other liberal countries, and the French nation will rise great and powerful in the strength of its peasantry and agricultural wealth.

The late Sewing Machine Patent Suit.

In the case of the Wheeler & Wilson Manufacturing Co., and the Grover & Baker Sewing Machine Co., *versus* Watson and others, alluded to in our last number as having been tried at New Haven, Conn., we are assured that no trial took place. Judgment was entered for the plaintiffs, but as no defense was set up by the defendants, the case was not tried; and therefore the points of alleged infringements are in no sense settled by this decision.

Vagaries of Philosophers.

It is humiliating to behold men somewhat distinguished and devoted to the teaching of science as a profession, arraying the vagaries of their minds in the garb of science, and thrusting them upon the public under the assumption of "profound deductions," and yet this is by no means uncommon. Such attempts appear to us, like Buncombe speeches, got up for the purpose of astonishing those who do not know the difference between sense, sound, or science.

At the meeting of the Association for the Advancement of Science, held last week in Baltimore, Professor Alexander read a paper on the "numerical harmony of the solar system," but to render the theory perfect, some planets were missing. Nothing daunted in supplying such an omission, the periodic comets were brought in to supply the place of the missing stars. But how many comets, we ask, would be required to supply the place of a missing planet the size and density of the earth? Practical science can answer this question. It would take no less than 466,561,074,-074,074,074—over four hundred and sixty-six thousand billions—each one hundred and eighty miles long. If there were such a number of comets in our solar system, we would see them darting through the heavens nightly, as thick as fire flies in July evenings. To find such a number of comets, we suggest to our harmonious philosophers the showers of stars which annually take place in August. They will find them very convenient to supply the deficiency.

In a lecture on comets, delivered by Professor Nichol, last winter, in the Glasgow Athenæum, he said, "What is a comet? A simple handfull of mist? no, that was too thick for a comet. The large comet seen in 1842, which was so long that if its head were at one end of the earth's orbit, its tail would come out of the other—180 millions of miles—was so light, that if it could be squeezed together to the density of water, the lecture room of the Athenæum could easily contain it. That was no theory, but positive fact, clearly proved." Upon this data, considering the lecture room named to be 150 by 100 feet, and 30 feet high in the ceiling, we have made the calculation above, thus showing that the prodigious number of four hundred and sixty-six thousand billions of immense comets, would be required to supply the place of one planet like our compact and venerable mother Earth. Having presented these figures, and described the attenuated structure of these "wanderers of the skies," we hope none of our readers will, after this, be afraid of comet collisions.

It should be the object of teachers of science to present their views on all subjects with great caution, and to theorize but little. Their duty is to present facts and describe experiments, not hypotheses and vagaries. It is no doubt very safe for some philosophers to indulge in scientific speculations, which never can be brought to the test so as to risk their reputation, but this neither advances science nor confers lasting honor upon themselves. They may gain a transitory distinction and an ephemeral adulation from some persons, by the very oddity of their views, but that is a miserable reward for time misspent and intellect frittered away upon the most useless subjects—mere vagaries.

An Error Corrected.

The London *Practical Mechanics' Journal* publishes in the April number a summary of Taylor's Bill for amending the U. S. Patent Law, and precedes it with the statement "we are informed on very good authority that the present bill is likely to become a law." We rather suspect that the good authority of our esteemed cotemporary has confounded the bill spoken of with the one subsequently introduced in the Senate by the late Senator Evans, and published in No. 28 of the present volume of the Scientific American. The two bills are entirely different in all essential particulars, and while the first has been virtually abandoned by its author, the excellent bill of Senator Evans is still pending, and we trust will become a law.

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Roofing Cements.

Having had a number of inquiries recently regarding cements for the roofs of buildings, we publish the following, being the substance of two specifications of patents for such compositions :—

First.—This patent was granted to R. H. Smith, of Cincinnati, on the 20th of January, 1857. The object of this invention is to prepare a cement suitable for roofing and other purposes that will not require the aid of fire in its preparation, and which will expand and contract under atmospheric influences without rupturing, and which will also speedily lose the offensive smell of coal tar, which is part of its composition.

It is formed by mixing the following ingredients in a cold state :—

To 21 parts of coal tar add one part of india-rubber dissolved in turpentine.

To 28 parts of coal tar add one part of gum shellac dissolved in alcohol.

To 21 parts of coal tar add one part of boiled linseed oil.

To 28 parts of coal tar add one part of common molasses.

These four solutions are prepared in separate vessels, each being well stirred until a thorough incorporation takes place. They are then left to stand for thirty-six hours, then all mixed together, and thoroughly incorporated, when, as a compound, it is ready to receive the substances employed as a drier. These are prepared as follows :—

To six parts of pulverized quick lime add one part of pulverized gypsum.

To 24 parts of pulverized quick lime add one part of litharge.

To 30 parts of powder quick lime add one part of yellow ochre.

Each of these dual parts is mixed together first, then the whole are thoroughly incorporated. To every four gallons of the former compound of tar, &c., one quart of this drying compound is added, and thoroughly stirred, when it is ready to put on a roof by spreading it in a thin layer, and pressing fine sand into it with a trowel or other instrument, or it may be put on with a brush like paint.

The coal tar is employed to give this cement body, the india-rubber to give it elasticity, the shellac strength, the linseed oil to repel moisture, and the molasses to act as a deodorizer. It is stated that in the course of two or three weeks after this cement is put on, the offensive smell of the coal tar is all gone, whereas, without the molasses, it will emit a disagreeable odor for about eighteen months, and this is a most serious objection to the use of such tar for roofing. The drier described is employed for the purpose of solidifying the cement.

Neither of the foregoing ingredients when used by themselves, or when combined with each other, is claimed broadly, but "the cement formed of the materials described, prepared in the manner and in the proportions set forth, to be made and applied to roofing, &c., without the aid of fire, and by which the offensive smell of coal tar is neutralized."

Second.—This patent was issued to Charles R. Milks, of Detroit, Mich., March 3, 1857. The nature of this invention consists in a composition for roofing, containing about double the quantity of rubber heretofore used, and which from long experience in the business, Mr. Milks found necessary to prevent its cracking, he uses ingredients, which have before been used in such cements, but they are employed by him in greatly increased proportions.

Take twenty gallons of naptha or coal tar and place it in a large kettle. To this are added two gallons of asphaltum, dissolved in purified spirits of turpentine at a moderate heat (the turpentine must be fully saturated with the asphaltum) ; two gallons of gum shellac varnish (shellac dissolved in alcohol) ; two gallons of rubber dissolved in turpentine, and one and a half gallons of boiled linseed oil. These are then subjected to a moderate heat, and ten pounds of soapstone dust, five pounds of sugar of lead, and one peck of plaster of Paris are added and thoroughly incorporated by stirring, when the whole is fit for use.

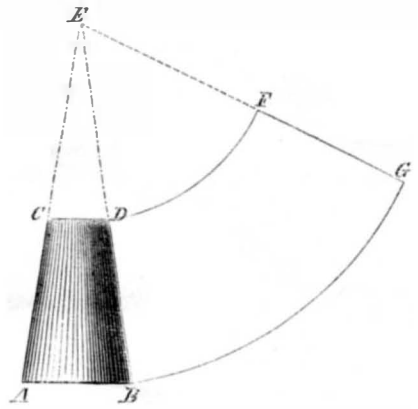
This patentee asserts that it is a wrong practice to employ cements for roofing purposes without heating all the ingredients. The asphaltum and an increased quantity of shellac are necessary to give the cement a compact character ; the rubber and linseed oil make it elastic, the soapstone gives it body, and is a non-conductor. This cement is stated to be durable, and not liable to crack. The claim is for this roofing cement, "made up of the ingredients, in the proportions, and in the manner set forth."

In preparing the first cement, there is not the least necessity for mixing the drier ingredients in three separate parts first. They can all be mixed together at once, and answer as good a purpose. We also cannot see the least necessity for mixing the ingredients of the primary solution separately, before they are all incorporated together. If all be mixed together as in the second specification, under the influence of heat, they will be more perfectly united. Excepting the molasses employed in these cements, all the other ingredients have been previously used in cements.

In our next number, we shall publish two other specifications of recent patents for roofing cements.

How to Cut a Piece of Leather which will Exactly fit a Cone Drum.

A correspondent writes and asks us the above question, and as it is one of general interest to machinists, we give a diagram to illustrate our answer :—



Make the line, A B, in the accompanying diagram equal to the diameter of the base of the drum, and C D equal to the diameter of the smaller end of the cone ; draw the lines, A C and B D, and prolong these lines until they meet at the point, E, strike two arcs, D F and B G, the first with E D, and the second with E B for radius, make the arc, D F, equal to the circumference of the smaller end, and B G equal to the circumference of the base of the cone, draw the line, F G, which will pass through the point, E, and the piece D B G F, if cut out. will exactly cover the cone drum.

In order to find the lengths of the arcs. D F and B G, it is only necessary to know the angle, D E F, which will correspond to these arcs, and the number of degrees of this angle can be found by multiplying 360 with the length of one half of the line, C D, taken in inches, and dividing the product by the length of the line, D E.

How to obtain Dry Boiled Potatoes.

Messrs. Editors—On page 253 of the present volume of the Scientific American, I notice your plan for cooking soggy potatoes. Permit me to give you my method of effecting the same object. I pare the potatoes about an hour before boiling, and then soak them in cold water until they are to be cooked. The water must be boiling before they are put in, and a little salt is added. When fully cooked the water is poured off, then the kettle or pot is placed on the stove, with the lid removed, to allow the moisture to evaporate. By this method of cooking potatoes, I have never failed to render them dry and mealy.

Mrs. H. N. W.

Freeport, Ill., April, 1858.

United States Circuit Court.

Before Hon. Charles J. Ingersoll, New Haven, Conn.

THE GREAT HAT BODY CASE.

This is a case involving great value, and which has excited much interest. It is one of several suits involving a controversy between re-issues of an original patent granted to Henry A. Wells, and owned by H. A. Burr & Co., and subsequent patents granted to Alva B. Taylor. It was a suit in equity in the United States Circuit Court in the district of Connecticut, on two patents, one for machinery, and the other for a process, and both of which were re-issues of original patents granted to Henry A. Wells on the 25th of April, 1846, one of the re-issues being for improvements in making hat bodies, consisting of the combination of a feeding apparatus to feed the fur to the rotating picker, to be received and thrown by the picker into a guiding and distributing race-way, having a peculiar delivery aperture, to distribute the disintegrated fur upon a revolving perforated conical vessel or former, having the air exhausted from within it, so as to cause the fur so distributed to adhere by the pressure of the air to its surface ; and the other re-issue being for hardening the bat while on the cone where so deposited, by covering the same with an outer cone also perforated, and immersing the whole into hot water, so as to remove it from the cone without injury, and thus form a fur bat of a conical shape, suitable for being made into a hat body.

The suit was brought by H. A. Burr & Co., the proprietors of the Wells' patent, against George E. Cowperthwaite, engaged in the manufacture of hat bodies in Danbury, Conn., and whom it was claimed, worked according to Letters Patent granted to Alva B. Taylor, and which the complainants claimed was an infringement upon their patent, both in the machinery and in the process employed.

The cause was argued last fall in New York at great length, before Justice Nelson and Judge Ingersoll, sitting as chancellors, by Charles M. Keller for the plaintiffs, and by George Gifford and George Harding for the defendant. The case was then held under advisement by the judges, and on Tuesday the 27th inst., at the opening of the court in New Haven, was decided in favor of the defendant by a lengthy and able opinion from Judge Ingersoll, in which he announced that Judge Nelson concurred.

Gilding and Plating Silk Thread.

A patent has recently been taken out in England by F. Burot for a process of gilding silk thread, as follows :—The silk is first immersed in a solution of acetate of silver, to which is added some ammonia. After two hours' immersion in this liquid it is taken out and dried, then submitted to the action of a current of hydrogen gas, which reduces the silver in the thread to a metallic state, fit to conduct a current of electricity. The silk is then gilded by any of the processes employed in gilding metal plates or objects, namely, by placing it in a bath with a gold solution in connection with a galvanic battery.

Another Great Telegraph Enterprise.

The London *Observer* states that a new company has been formed in that city for the purpose of laying a submarine cable through the Atlantic, between Europe and America, with an intermediate mid-way station at the Azore islands. This is a very plausible project, but we trust this new company, before contracting for its submarine cable, will wait until the old company makes its second grand effort next month.

Senator Evans, of South Carolina, Chairman of the Committee on Patents, expired very suddenly in Washington on the evening of the 7th inst. Mr. Evans was a very highly respectable man, and much esteemed in the Senate. But a few weeks since he reported a Patent Bill published in No. 28.

The third new comet of 1858 was discovered at Harvard College Observatory by Horace P. Tuttle, on the 2nd inst., at 10 P. M.

Scraps for the Museum of Science.

The study of the natural sciences is a never-failing source of delightful occupation, and has a direct and positive tendency to create and keep alive both religious and moral sentiment. No one who opens, in a proper spirit, the great book of nature, can ever fail to turn from its contemplation with a more devout and reverential acknowledgment of the Divine Author's infinite wisdom, goodness, and power.

Insects.—The number of distinct species of insects already known and described cannot be estimated at less than two hundred thousand—there being nearly twenty thousand different beetles alone, known at the present time—and every day is adding to the catalogue.

Clothing of the Earth.—The globe is a mass of vegetable life. Plants are the universal covering—the dress of the naked earth. They perform vast functions, reclaiming, extending, and improving it. They are the basis of animal life and existence ; their very beauty, their social and benevolent language, render even this troubled scene a place of delight. He who communes and meditates among trees and flowers shall find his Maker there to teach his listening heart.

Cells of Bees.—The shape which bees give to their cell is a regular hexagon. They could not have chosen a figure which would have afforded them a greater number of cells in the space contained in the hive. The property of this figure is that many united together completely fill up a space round a certain point, without leaving any void whatever.

Air Bladders.—Fish possess the power of rising or sinking, by means of an air bladder ; when distended with air, the fish is buoyed up, and remains on the surface of the water without any effort of its own. On compressing the bladder by the action of the surrounding muscles, the included air is condensed, and the fish sinks to the bottom. On relaxing the same muscles, the air recovers its former dimensions, and the fish is again rendered buoyant.

Peruvian Bark.—This is the bark of a tree found in South America, which contains in it the powerful bitter and tonic *quinia*. The sulphate of quinine is obtained by treating the bark with sulphuric acid, when the compound crystallizes out. It is much used in medicine, in doses of from one to six grains, according to the age and condition of the patient.

The Laboratory.—The four interesting articles which have recently appeared in the Scientific American upon this subject were prepared by Mr. Septimus Piesse—our esteemed London correspondent. He wields the pen of a ready writer upon any topic that stands related to the laboratory. His information is gathered out of a large experience in the preparation of all the choicest articles for the toilet. Among the most fragrant scents we have ever met with is the "Frangipanni, an eternal perfume," prepared by Mr. Piesse. It can be obtained of Inger & Co., Broadway, New York.

The Age of Oysters.—The process by which oysters make their shells is one of the most singular phenomena in natural science, and from the successive layers or plates overlapping each other, found on them, their age can be ascertained. Each layer makes a year's growth, so that by counting them, the year the bivalve came into the world can at once be determined. Up to the time of their maturity the layers are regular and successive, but after that time they are piled one over the other, and give a more thick and bulky appearance to the oyster.

A composition made of roasted starch, salts of soda, and magnesia has been patented in England by F. G. Calvert and C. Lowe, as a substitute for glue and other animal size employed in dressing textile fabrics.

The illuminating power of the electric light is to the best wax candle, as 1444 is to 1.

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Correspondents

H. L. S., of N. H.—If a patent is extended, it does not affect the right of parties to run such machines as they had in operation before the extension was granted. Such right is clearly recognized by judicial decisions.

J. W. F., of Minn.—For the information you want address W. B. Leonard, American Institute, New York city.

C. C., of N. Y.—From the seed of the potato we should not have had a useful plant in less than three years; from the tuber we possess it in a single summer.

R. G., of Miss.—The flowering of plants is subject to a law of periodicity and habit. Alpine plants do not wait for the sun's heat, but exert such a struggle to blossom that the flowers are seen among the unmelted snow.

W. S. B., of Mo.—Common plaster will not answer for rough brick walls exposed to the weather, it will soon crack off; and hydraulic cement and sand is still worse. You must make up a cement of boiled linseed oil, containing a drier, (such as litharge,) and mix this with some brick dust, dry pipe clay, and fine sand, and put it on with a trowel. The bricks should receive two coats of boiled linseed oil before this cement is put on.

D. J. H., of Ohio.—Cast steel bells are made and sold by Messrs. Naylor & Co., this city. Such bells are cast to weigh from 35 to 6,000 pounds, and have been used with success for about six years in the Canadas and in the north of Europe. The price per pound at which these bells are sold is 28 cents for all that weigh over 65 pounds.

H. D. F., of Mass.—We have placed your letter on file, and await your future orders in reference to the progress of your invention.

R. A. D., of Mass.—It is reasonable to suppose that after an application for a patent has been on file for one year, and no patent issued for the invention, that the application has been refused. Still there may be circumstances which will delay a case for that length of time.

S. W., of N. Y.—It is the opinion of many geologists that there was a period in the history of the earth when the atmosphere was more highly charged with carbonic acid gas and moisture than at present, and that plants of a larger species then flourished in luxuriance, their light being obtained through a warm but cloudy atmosphere. This is the period mentioned in Genesis, prior to the time when, it is stated, the sun was put in the heavens. There seems to be a harmony between the series of creations recorded in the Scriptures and the revelations of geology.

D. G. B., of Ohio.—Alcohol is a compound of 24 parts of carbon, by weight, with six of hydrogen, and sixteen of oxygen. It cannot be made, however, by the direct union of its elements, but has to be separated by fermentation from other substances, as grain and sugar.

R. H. C., of N. Y.—The mirage is a meteorological phenomenon, depending partly on the vapor of the atmosphere, and partly on the intermixture of strata of air of different temperatures and densities. It assumes the appearance of a sheet of water, often exhibiting the reflected or inverted images of distant objects.

B. M., of Fla.—We do not know where the moss saddle rugs are manufactured. Perhaps some of our readers can inform you.

W. T. H., of Ind.—By assuming another person's name in your correspondence with us, hoping thereby to get favors, you have placed yourself beyond the right of consideration from us, and we therefore decline all further correspondence with you.

E. T. Paine, of Charleston, S, C., wishes to purchase the best and most complete machine for cutting and dressing staves thirty-two inches long for cypress or molasses barrels, and also adapted to shingle cutting and dressing.

P. A. R of Pa.—Conducting water through a coiled tube arranged in the bottom of a well between the head and point of exit, for the purpose of cooling the water is an old idea, and therefore not patentable.

W. S. M., of Conn.—Bevel gear is more expensive at first than belt and pulley for your saw mill, but will not cost so much for repairs, if properly cast and cut. We are in favor of bevel gearing in many cases, but not in all.

S. F. C., of Ohio.—Orpiment is a general name for two sulphurets of arsenic, the yellow or prismatoidal sulphuret, and the red or ruby sulphuret. They are both used as paints, the yellow being the coloring body of the paint known as "king's yellow."

J. B., of Ill.—There is no water in the moon—the dark spots being valleys, not lakes.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, May 8, 1858:—

I. F. B., of Ga., $25; L. & G., of Conn., $30; C. C. W., of N. J., $55; B. H. W., of Mo., $55; B. B. M., of Fla., $25; K. F., of Wis., $25; J. O., of Md., $10; J. M. N., of Iowa, $58; A. M. P., of N. Y., $25; S. W., of N. Y., $250; T. S., of N. Y., $25; G. B. B., of Conn., $25; G. W. C., of Ill., $60; G. W. L., of Texas, $33; A. H., Jr., of Conn., $57; A. J. B. F., of Ind., $25; S. N. C., of Ill., $12; J. C. B, of N. Y., $35; J. & H., of N. Y., $60; A. D. B., of Mass., $25; G. H., of Mass., $60; D. B. W., of N. Y., $25; W. R., of Mich., $30; M. M. S., of Ill., $30; A. W. W., of Conn., $37; G. G., of Ill., $5; L. H., of La., $33; S. T., of N. J., $55; J. M., of N. J., $30; H. H. L., of R. I., $30; H. & W., of Mich., $30; A. E. P., of Vt., $27; H. S. B., of Mass., $30; S. M. C., of Wis., $25; J. S. B., of S. C., $30; S. C. C., of Mich., $30; C. D., of L. I., $25; J. & D., of N. Y., $25; J. E., of N. Y., $55; J. H C., of N. Y., $110; G. H. L., of N. J., $18; A. D. B., of N. Y., $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, May 8, 1858:—

A. J., of Ill.; G. B. B., of Conn.; L. & G., of Conn.; R. & S., of Ohio; B. B. M., of Fla.; N. C., of Ohio; K. F., of Wis.; S. N. C., of Ill.; G. W. S., of Ind.; D. B. W., of N. Y.; A. D. B., of Mass.; A. M. P., of N. Y.; E. V. S., of Miss.; A. J. B. F., of Ind.; C, D., of L. I.; J. M. C., of Wis.; G. G., of Ill.; J. & D., of N. Y.; A. W. W., of Conn.; W. D., Jr., of Pa.; N. W. B., of Vt.; H. S. F., of Mass.; J. M. N., of Iowa; J. E., of N. Y.; A. D. B., of N. Y.; W. B., of N. Y.; L. E. H., of N. Y.

Literary Notices.

THE NEW AMERICAN CYCLOPÆDIA. D. Appleton & Co., Broadway, New York. The appearance of the second volume of this valuable national work, embracing words from ARA to BEA, again calls upon us to give a notice of it. Of the gentlemen who are employed to collect the matter we can say that they have, as a body, done their work well, although in some instances they have not said quite enough about their subject. As the work progresses there is more interest awakened in its success, and it assumes more distinctively the position of "The American Cyclopædia." A new and valuable feature of this work is its biographical articles which are not confined to the "mighty dead" alone, as is usual, but the "famous living" are also noticed, among which the account of Agassiz is remarkably interesting; in fact, all the biographies are honorable to their authors. A full account of the Atlantic Ocean is in this second volume, the commercial history as well as the science of which is included in the article. The publishers and editors seem to be sparing no pains to make the work one of standard value and sterling merit.

A WOMAN'S THOUGHTS ABOUT WOMEN. By the Author of "John Halifax, Gentleman." Rudd & Carleton, 310 Broadway, New York. That women labor under many social disadvantages, no one is prepared to deny, and this lady knowing this, and feeling it deeply, writes a book of sound, sober, sensible advice. It is a book that must do good, for it tells the sex to have more self-reliance, and to believe more truly in her holy mission that she may act more consistently with her end, ever bearing with her an elevating influence of modesty, courage and charity. Heartily we recommend all to read it, and that carefully.

PRINCE CHARLES, OR THE PRETENDER, is the title of an interesting tale published by Dick & Fitzgerald, of 18 Ann street, New York, and written by that very popular author, J. F. Smith. The tale is written with his usual vigor, and is highly interesting.

THE CRANBERRY AND ITS CULTURE. By B. Eastwood. A. O. Moore, New York. This is a book full of practical instruction for the treatment and development of the cranberry vine, and to all growers of that luscious fruit must prove an invaluable handbook of sound information.

CORNELL'S FIRST STEPS IN GEOGRAPHY. D. Appleton & Co., Broadway, New York. This is an excellent little book arranged in the form of question and answer for teaching children geography. It is full of illustrations which cannot fail to interest the juvenile learner.

BLACKWOOD'S MAGAZINE—Published by Leonard Scott & Co., No. 54 Gold street, New York—The number for this month of this veteran and able magazine, is an able one. The first article is on Dr. Livingston the Missionary Explorer. Bulwer's novel, "What will he do with it?" is continued, besides there are six sterling essays on various subjects.

THE CHARLESTON MEDICAL JOURNAL AND REVIEW.—Published by Walker, Evans & Co., Charleston, S. C.—Contains seven original essays of a very superior character, besides a great mass of general medical intelligence. This is a most able medical periodical.

THE ECLECTIC MEDICAL JOURNAL. R. S. Newton, M. D., Cincinnati, Ohio.—In this number there are excellent articles on "Mercurials," by Dr. Jones; on "Malpractice Cases," by the editor, and many others of great interest.

HALL'S JOURNAL OF HEALTH, for May, contains some very valuable advice, which, if taken, will help its readers to keep out of the doctor's hands. It is a most useful periodical, and should be in every family.

THE SOUTHERN PLANTER, published at Richmond, Va., for this month, has a digest of all the agriculture of the South, and is always interesting and full of wholesome freshness.

TERMS OF ADVERTISING.

Twenty-five cents per line each insertion. We repectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

*** All advertisements must be paid for before inserting.

WHEELER & WILSON MANUFACTURING COMPANY'S SEWING MACHINES.—Highest Premiums awarded 1857, by the American Institute, N. Y., Maryland Institute, Baltimore, and at the Maine, Connecticut, Michigan and Illinois State Fairs. Office, 343 Broadway, New York. Send for a circular.
We prefer them for family use.—[Tribune.]
They are the favorites for families.—[Times.]
It is without a rival.—[Scientific American.]
Equal to nine seamstresses.—[Home Journal.]
Most honorable to American genius.—[Independent.]
The machine, for family use.—[Advocate & Journal.]
Will give entire satisfaction.—[Observer.]
The best ever invented.—[Christian Inquirer.]
In looking for the best, see these.—[Examiner.]
Indispensable in every family.—[The Preacher.]

FIREARM CHALLENGE—L. H. GIBBS, OF New York, has accepted Lieut. Symmes' challenge, to fire with their breech-loaders, on the 25th, 26th, and 27th of May, near Boston, Mass. The stakes are $500 a side. The distances are 100, 300, and 600 yards; and the firing to be 300 shots, without cleaning. All interested in such things are invited to attend, at the time and place mentioned above.

FOR SALE—A SUIT OF SUBMARINE ARmor, Air Pump and Hose. Price $150. Apply to GEORGE C. HOWARD, No. 17 South 18th st., Philadelphia, Pa.

PHILADELPHIA RIVET WORKS—MANUfacturers of the celebrated P brand boiler tank gasometer rivets, of every diameter, length, and head.
PHILLIPS & ALLEN.

THE PRACTICAL MECHANICS' JOURNAL.—Wiley & Halsted, 351 Broadway, New York, are the agents for the United States for this valuable Journal, (which is issued monthly,) and supply the same at $3 per year—subscriptions payable strictly in advance. A specimen number will be sent and prepaid on the receipt of 25 cents in postage stamps. Vols. 1 to 10, in full cloth binding, can be supplied for $3 50 each, or in numbers for $3. No. 1 of Vol. XI commences with the April number for 1858. Scientific catalogues are furnished gratis, and mailed and prepaid on receipt of postage stamp.

IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the SCIENTIFIC AMERICAN, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of twelve years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.
Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office, 128 Fulton street, New York. We have lately established a Branch Agency on the corner of F. and Seventh streets, Washington (opposite the United States Patent Office). This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it.
We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.
Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.
Communications and remittances should be addressed to
MUNN & COMPANY,
No. 128 Fulton street, New York.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.
Yours, very truly, CHAS. MASON.

NEW YORK WIRE RAILING CO.—COMposite Iron Railing (secured by letters patent) is the strongest iron fence made of wrought iron. Its durability is equivalent to its strength; its beauty shows for itself; and as to price, it is cheaper than any iron railing manufactured. We are prepared to furnish all styles of wire and cast iron railings, &c., iron gates, verandahs, farm fences, iron bedsteads, iron furniture, iron foundry work. The public is respectfully informed that we are the only persons legally authorized to sell Wickersham's Folding Iron Bedsteads. Catalogues, containing several hundred designs of iron work, furnished on application.
HUTCHINSON & WICKERSHAM,
No. 312 Broadway, New York.

RIGHTS FOR SALE OF A PATENT SELFRegulating Windmill, that has been well tested. It operates safely, and makes a steady power in the hardest gales. Great inducements given to agents and dealers. Address A. G. Field, Quincy, Ill.

IMPORTANT TO GAS AND STEAM FITTERS.—Hudgin's Patent Coupling for pipes can be seen at Messrs. ARCHER, WARNER & CO'S, 376 Broadway. State, County and Town rights are for sale. This invention (Pat. April 6, 1858,) greatly facilitates the work of attaching branches and making extensions. Persons desiring to purchase this invention can communicate with the patentee by leaving their address at ARCHER, WARNER & CO.'S,
No. 376 Broadway, New York.

MACHINISTS' TOOLS FOR SALE AT HALF PRICE.—I will sell the remainder of the tools belonging to the estate of John Parshley at half price, if called for soon. Said tools are new and in good order. They consist in part as follows:—One 16 foot planer, one 4 foot planer, 10 hand lathes, 2 spliner drills, 13 No. 1 drills, 1 bolt header, 1 shaft straightener, plane centers and jaws, chucks, all sizes, &c., &c.
N. D. SPERRY, Trustee, New Haven, Conn.

A SAFE, GOOD BUSINESS, REQUIRING SMALL CAPITAL.—Any person living within four or five miles of a town, containing 3,000 or more inhabitants, can secure to themselves a good business by purchasing the right, with requisite machinery for cutting Daniel's Granular Fuel. This fuel consists of the swamp growth of brushwood and twigs, and trimmings of trees cut into lengths of about four inches. The machine will cut up with two horse power and two men 1,000 bushels per day. The material wherever introduced is preferred to charcoal or split wood for kindling coal or wood fires, and is found to be a most superior article for a summer fuel. As a patent is secured for cutting this material by machinery, all parties who purchase territory can have exclusive sale in that territory. All communications addressed to B. D. WASHBURN, Taunton, Mass., General Agent for the United States, will meet with prompt attention.

MACHINISTS' TOOLS—A FULL SUPPLY OF every variety, and superior quality, now on hand, and made to order at short notice. Railroads supplied. Also one 8-horse upright engine, in complete order; price $300. CARPENTER & PLASS,
No. 479 First ave., New York.

5000 AGENTS WANTED—TO SELL FIVE NEW INVENTIONS.—Agents have made $25,000 on one. No other agency so good. Send stamp and get 80 pages particulars gratis.
EPHRAIM BROWN, Lowell, Mass.

PAGE'S PATENT PORTABLE CIRCULAR SAW MILL, and Portable Steam Engines and Boilers mounted on substantial wheels, ready to saw lumber, thrash wheat or gin cotton. Our Mills will saw from 2,000 to 10,000 feet per day. Address
GEO. PAGE & CO., Baltimore, Md.

PATENT OFFICE MODELS CAREFULLY made on scientific principles, at low prices, by H. SHLARBAUM & CO., 300 Broadway, New York. References at the office of this paper.

ANOTHER WONDER—BALDWIN'S TURbine Water Wheel (represented in No. 51, Volume XII, SCI. AM.) gives from 75 to 97 per cent of power, according to the size of wheel and head employed. Usual sizes, with 4 to 25 feet fall, give 80 to 90 per cent. For information address S. K. BALDWIN, Laconia, N. H.

WOODWORTH PLANERS—IRON FRAMES to plane 18 to 24 inches wide—at $90 to $110. For sale by S. C. HILLS, 12 Platt street New York.

PORTABLE STEAM ENGINES.—S. C. HILLS, 12 Platt street, New York, offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, suitable for printers, carpenters, farmers, planters, &c. A 2½ horse can be seen in store; it occupies a space 5 by 3 feet; weight, 1,500 lbs.; price, $240. Other sizes in proportion.

STEAM ENGINES, STEAM BOILERS, Steam Pumps, Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and Pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front street, Brooklyn, N. Y.

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn.

THE WORKS OF THE AUBIN GAS CO., (General Office, No. 44 State st., Albany, N. Y.,) as now perfected, are adapted to all materials and localities, and are in successful operation in villages, factories, and private dwellings. For full information as to cost, probable income of public works, &c., apply as above. For plans, &c., see SCIENTIFIC AMERICAN of March 13th.

SECOND-HAND MACHINISTS' TOOLS—Consisting of 20 Engine Lathes, 9 Iron Planers, 4 Upright Drills, Hand Lathes, Chuck Lathe, Gear Cutters and Vices, all in good order, and for sale low for cash. For particulars, address FRANKLIN SKINNER, 14 Whitney avenue, New Haven, Conn.

MACHINE BELTING, STEAM PACKING, ENGINE HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY. JOHN H. CHEEVER, Treasurer, No. 6 Dey street, New York.

PECK'S PATENT DROP PRESS—FOR Jewelers, tin and copper workers, gun and other forgings, &c., manufactured by the patentee, MILO PECK & CO., New Haven, Conn.

NEW HAVEN MANUFACTURING CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn."

ENGRAVING ON WOOD AND MECHANICAL DRAWING, by RICHARD TEN EYCK, Jr., 128 Fulton street, New York, Engraver to the Scientific American.

STEAM WHISTLES—IMPROVED PATterns manufactured by HAYDEN, SANDERS & CO., 306 Pearl street, New York.

WOODWORTH PLANING MACHINES.—Having over $40,000 worth now completed, I will sell, from this time henceforth, at a very reduced price, and am ready to construct any sizes not on hand at short notice. JOHN H. LESTER,
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LAP-WELDED IRON BOILER TUBES—Prosser's Patent.—Every article necessary to drill the tube-plates and set the tubes in the best manner.
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OIL! OIL! OIL!—FOR RAILROADS, STEAMERS, and for machinery and burning. Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer, F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe.

VAIL'S SPEEDWELL IRON WORKS, Morristown, N. J., manufacture Craig's Patent Double-acting Balance Valve Oscillating Steam Engines both stationary and portable, Knowles' Patent Muley, Portable, Gang and Re-sawing Mills, Sugar and Chinese Cane Mills and Sugar Pans, Grist Mills, Mill Irons, Rich's Water-wheels, Forgings and Castings. Orders for the above, and all descriptions of labor-saving machinery will receive prompt attention.
JOHN H. LIDGERWOOD & CO.,
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MACHINERY.—IF YOU WANT THE BEST Portable or Stationary Steam Engines, Woodworth's or Daniels' Planers, or any other kind of machinery for working wood for the least amount of money, address HARRISON FLINT, Danbury, Conn.

CORLISS' PATENT STEAM ENGINES—About 250, most of them from 40 to 400 horse power, are now in operation. On application, pamphlets will be sent (by mail), containing statements of responsible manufacturing companies where these engines have been furnished, for the saving of fuel, in periods varying from 2½ to 5 years. Boilers, shafting, and gearing.
CORLISS STEAM ENGINE CO.,
Providence, R. I.

PEA SHELLING MACHINE.—PATENTED by W. J. Stevenson, March 30, 1858. This machine is admirably adapted to the use of hotels, dining saloons, boarding houses, private families, pea growers, and pea preservers. State rights for sale. Address the patentee at No. 438 Third avenue, New York City. See engraving on page 34, Vol. XIII, SCIENTIFIC AMERICAN.

C. HECKMANN, MANUFACTURER OF MACHINERY—Of brass, copper, and iron wares, at Hamburg, Germany, recommends himself for the manufacture of steam boilers, Roberts' apparatus, machiney and apparatus for sugar refineries, breweries and distilleries, of the most approved constructions; also for the whole planning of any factory with drawings and mountings. All orders will be executed with promptness and on the cheapest terms. Inquiries must be made prepaid.

FOR SALE—RIGHTS IN TWO PATENTS FOR Steam Engine improvements, being a valuable variable cut-off, and practical direct connection of piston rods with crank, effecting great saving in construction and fuel. Interests given to capitalists. Inquire of B. ACKERMANN, 710 Broadway, New York.

WELL'S PATENT SINGLE AND DOUBLE CIRCULAR SAW MILLS, with simultaneous and independent hand and self setting head blocks and patent friction feed, universally admitted the best mills extant for manufacturing lumber. Self-acting shingle and lath machines, jointers, saw mandrels with Well's patent self-adjusting boxes. Saw tables, saw-sets and swages manufactured by H. WELLS & CO., Florence, Mass.

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Science and Art.

New Alloy for Journal Boxes.

The following is the substance of a patent granted to Thomas Forth, of Cincinnati, Ohio, on the 1st of May, 1855 :—

Take seven and a half (7½) pounds of pure copper and melt it in a crucible; then gradually add, in small pieces, ninety-two and a half (92½) pounds of zinc, which when all melted and the two metals thoroughly mixed, the alloy is to be run into molds for journal boxes. The claim for this composition is the alloy in the exact proportions stated, which is asserted to make a superior and cheap composition for journal boxes. The alloy is simply a brass with the zinc greatly preponderating, and half a pound added or taken from the proportions given, of course, obviates the patent.

Having recently had quite a number of inquiries regarding the composition of "Babbitt metal," and presuming they come from new subscribers, we feel called upon to publish the recipe, although we have given it in a former volume :—

Take 24 pounds of copper and melt it first in a crucible, then add gradually 24 parts of pure tin and eight of antimony. Great care must be exercised in adding the tin to the copper. This composition is rendered softer by the use of a greater quantity of tin. Many persons suppose that the above metallic alloy is the subject of a patent by Mr. Babbitt; it never was patented. The patent was for lining iron journal boxes with soft metal.

The Æolian Harp.

A correspondent desires us to give him some particulars of this instrument, and directions how to construct it; and as the summer is coming on, and its melancholy music may find many who will enjoy it during the hot season, we give the desired information for the benefit of all our readers :—

This instrument consists of a long narrow box of very thin pine, about six inches deep, with a circle in the middle of the upper side, of an inch and a-half in diameter, in which are to be drilled small holes. On this side seven, ten, or more strings of very fine catgut are stretched over bridges at each end, like the bridge of a fiddle, and screwed up or relaxed with screw pins. The strings must all be tuned to one and the same note, (D is, perhaps, the best,) and the instrument should be placed in a window partly open, in which the width is exactly equal to the length of the harp, with the sash just raised to give the air admission. When the air blows upon these strings with different degrees of force it will excite different tones of sound. Sometimes the blast brings out all the tones in full concert, and sometimes it sinks them to the softest murmurs.

A colossal imitation of the instrument just described was invented at Milan in 1786, by the Abbè Gattoni. He stretched seven strong iron wires, tuned to the notes of the gamut, from the top of a tower sixty feet high, to the house of a Signor Moscate, who was interested in the success of the experiment, and this apparatus, called the "giant's harp," in blowing weather yielded lengthened peals of harmonious music. In a storm this music was sometimes heard at the distance of several miles.

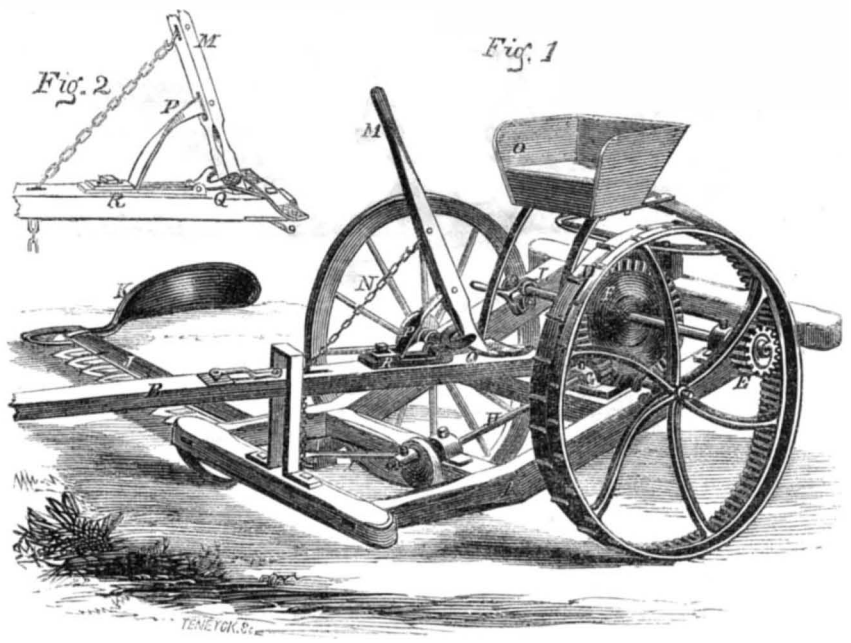
Improved Mowing Machine.

This mowing machine is possessed of the valuable peculiarity that in any position of the cutters they are perfectly balanced on the axle by the weight of the driver on his seat, O, and the draught-pole is so attached that when the machine is "backed," the sickle is raised from the ground, and it can in consequence turn freely at the end of the swath.

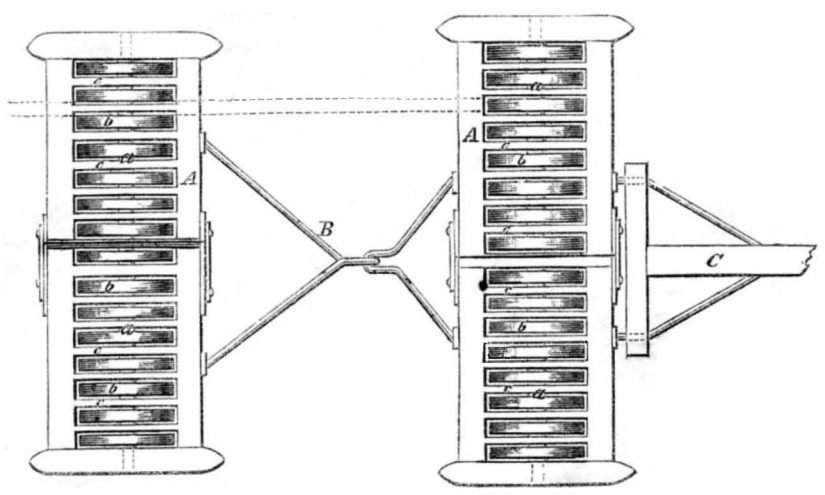
Fig. 1 is a perspective view of this machine, in which A is the frame, B is the draught pole that can move up and down in the guides on the front of the frame, and it is hinged to the frame at a point behind the axles, C, on which the frame is suspended. D is a driving wheel which also serves to support the frame, and it has teeth on the inner side of its periphery which gear into E, and thus the rotation of D gives motion to the bevel wheels, F G; a rod, H, carrying the latter, and having on its other end an eccentric, gives the proper reciprocating motion to the cutters in the sickle, J, by means of the rod, I. K is a board or casting for guiding the grain or grass in its and sickle to any desired hight from the ground, and when it is in the proper position the pawl P (seen better in Fig. 2) secures it by catching in one of the teeth upon the rack, R. When it is desired to release the pawl, the driver places his foot upon the lever, Q, and that lifts up the pawl and allows the frame to fall to its lowest position. From this description it will be seen that the frame is perfectly balanced, and that the force exerted on the draught pole in "backing" will be thrown on the back of the frame, and thus raise the sickle free from the ground.

This is a light and very convenient machine, and will, we have no doubt, fulfil the purposes for which it is intended by the inventor, F. Nishwitz, of 134 First street, Williamsburg, L. I., who will furnish any further particulars. A patent was obtained on it Feb. 16, 1858.

NISHWITZ'S MOWING MACHINE.



THOMPSON'S SEED ROLLER.



Our engraving is a top view of a roller that is intended for rolling seeds into the earth, after they have been planted in or thrown upon it by any suitable means.

A A represent two frames that are jointed together at their centers. To the underside of each frame are attached axles, *a*, one at each side of the joint, and on these are placed wheels having their rims of a suitable shape to act as rollers, *b*. Between each of the wheels is a slat, *c*, and the rolling wheels of the fore frame, A, are opposite the slats of the back frame and *vice versa*, as will be seen by referring to the dotted lines in the illustration; this insures all the ground being rolled which is within the compass of the machine. The two frames, A, are connected together by a jointed reach, B, and a pole, C, is fixed to the fore one for the horses to be attached to. The drag merely throws a light covering of earth over the seed which is often displaced by the winds, leaving them exposed, and the harrow covers portions of the seed too deep, and others not at all, while this roller, conforming as it does, to all the inequalities of the ground (by being jointed) covers all the seed equally and with the same pressure. Advantageous as jointed roller frames are acknowledged to be, they are seldom used, because in moist ground they are liable to become clogged from the damp soil adhering to them, and thus preventing their perfect action; but this roller is free from this disadvantage, for the slats, *c*, take off all the soil at the point where it is most easily detached, namely, in a horizontal line just above their axis of rotation, and thus keep the rollers clear, and all the soil thus dropped from the fore rollers is pressed into the ground by the succeeding frame. All the small clods are crushed and pressed into the ground, and in every way it answers the purpose for which it is designed.

It was patented Dec. 9, 1856, by the inventor, Anson Thompson, of Glen Falls, N. Y., who will be happy to give any further information.

Filling Teeth with Tin.

Messrs. Editors—In No. 21, this Vol., Scientific American, my attention was specially attracted by the article headed "Tin versus Gold for Teeth," in which testimony in favor of the former over gold was adduced. To this I also wish to add my testimony. In 1839 I had my teeth examined by a good dentist, who filled all the cavities (fifteen), with but one exception, with gold. This exceptional tooth was filled with tin, and was considered so much decayed that the use of gold was held to be extravagant, hence the employment of tin foil for the purpose. One of the teeth then filled with gold is now entirely gone, and several others have had their filling renewed, but the one filled with tin is as good as it was on the day the operation was performed. I am satisfied, both in regard to the durability and comfort experienced, by the use of tin, as a substitute for gold in filling teeth. I do not express an opinion as to the cause; I merely relate my own experience. Tin is, undoubtedly, a superior non-conductor to gold, and perhaps its expansion by slight oxydation may tend to render it more durable, and at the same time fit more accurately in the cavity. D. S. Howard.

Corpus Christi, Tex., April, 1858.

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